AMERICAN
JOURNAL OF SURGERY

VOL. XXIII. NOVEMBER, 1909. No. 11.

SOME EXPERIMENTS IN CERTAIN METHODS OF INTESTINAL ANASTOMOSIS.*

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Previous to the application of antiseptic principles to surgical technic, the operations of intestinal resection and anastomosis were considered to be extremely dangerous and were very rarely performed. The history of the development of this branch of surgery is extremely interesting.

The very earliest period in which an intestinal suture is mentioned is by Celsus, A. D. 20, and the first description of it was given by the Italian surgeons of the Middle Ages. The statement is made in the literature that Guilielmus de Saliceto (about 1500) sutured the bowel over a segment of dried intestine. He employed also the so-called suture of the "Four Masters," which consisted of four interrupted sutures passed through the divided bowel and the trachea of a goose which had been inserted within the bowel to keep the lumen open.

Even in 1686 it was considered too dangerous to suture wounds of the small intestine, as can be seen by consulting the writings of Richard Wiseman, who used the glover's stitch in suturing wounds of the large intestine. Heister in 1739 thought that it was useless to suture the intestine on account of the high mortality attending it, but preferred the glover's stitch if the operation were done at all. Thus it appears that during the last century and up to about 1812 it was the general opinion among surgeons that wounds of the small intestine ought never to be sutured and that it was practically a hopeless operation to suture the large intestine.

Later on the wounded intestine was sutured to the anterior abdominal wall, thus making an artificial anus, with no attempt at repair of the wound of the intestine at the time of operation or even afterwards. Such was the method of Palfyn, who carried a loop of thread through the edges of the intestinal wound and fastened the ends externally. Peyronie passed a double thread around the bowel. Others used a single stitch with the same idea in view.

Reybard, of Paris, in 1827 used a slightly different method to cause adhesions to form between the peritoneal coat of the intestine and the abdominal wall. He used a small strip of wood with rounded edges, in the middle of which two holes were made about a line apart. A loop of thread was carried through these holes and the piece of wood was inserted in the intestine. Each end of the thread was then carried on a needle from within out through the edges of the intestinal wall. The sutures were then threaded with curved needles and carried through the abdominal wall from within outwards and tied externally. Reybard cut the thread two days after the operation and the strip of wood fell into the intestine. The mortality following this operation was high and those who recovered developed fecal fistula.

The first successful intestinal anastomosis was done by Ramdohr in 1780 by invagination and suturing the bowel to the abdominal wall. Travers in 1812 was the first to discover that an intestinal anastomosis could be successfully performed without suturing the bowel to the abdominal wall.

Lembert, of Paris, in 1825 and 1826 did the pioneer work in modern intestinal suturing. As his method is universally misunderstood and misquoted in all surgical text-books and journals I take the liberty of quoting freely from one of his original articles as read before the Surgical Section of the Royal Academy of Medicine of Paris, January 26, 1826. Lembert says that he "employs as many needles as there are points of suture to be passed. The needle penetrates into the cavity of the intestine about two lines from the edge of the wound or its point glides between the muscular and mucous coats according to the thickness of the intestine, then the point of the needle is made to come out again about one line from the edge of the wound whence it is carried across the wound and made to penetrate the bowel wall about one line from the edge of the wound and comes out about two lines distant. When the suture is tied the serous membranes are brought together and the

* Read before the Michigan State Medical Society, September 16, 1909.

free edges of the wound are inverted into the cavity of the intestine and form a projection into it of greater or less extent. The sutures cut through little by little the small portion of the intestine which they include and fall into the intestine." Thus Lembert's original idea was to get union of serous surfaces by means of a suture which passed through all the coats of the intestine. It was only by accident that some of the sutures failed to penetrate the mucous coat. Consequently the sutures always disappeared into the lumen of the bowel. Even after the third day following the operation Lembert could find no sutures at the site of the operation. The suture which is described at the present time as Lembert's is really a sero-muscular stitch which does not penetrate the mucous coat of the intestine and must be differentiated from Lembert's original suture if we wish to be historically accurate. Furthermore a sero-muscular stitch will not disappear into the lumen of the bowel but will remain indefinitely in the intestinal wall, as I have frequently demonstrated in specimens of end-to-end anastomosis which have been performed on dogs in the Surgical Laboratory of the University of Michigan. It is only when this suture becomes infected by penetrating the mucous coat that it disappears into the lumen of the bowel. Consequently the sero-muscular stitch should not be described as Lembert's as it is in all the surgical literature of the present time.

On account of the danger of retraction of the mucous membrane with the attending fecal extravasation and possible obstruction of the bowel when the mucous membrane is not sutured, two rows of stitches are generally employed; one to include the mucous membrane and the second, a row of sero-muscular stitches, to maintain the union until repair is complete. The mortality following the operation of intestinal resection has been considerably reduced in recent years by a gradual improvement in technic. Mayo reports a mortality of twelve per cent. in one hundred cases of resection of the large intestine with lateral anastomosis. In end-to-end anastomosis the mortality is considerably higher, being about forty per cent.

The Connell suture is an attempt to overcome some of the difficulties which attend the method by two rows of stitches. It passes through all the coats of the intestine with the knots tied on the inside instead of on the outside, as in the original Lembert suture. It has been experimentally proved that the drainage of infective material is toward the knot and, therefore, in this case toward the lumen of the intestine where it can be eliminated without causing any peritonitis. On the other hand, if any of the sero-muscular stitches which are applied in an enterorrhaphy happen to penetrate the mucous membrane the infective material will drain toward the peritoneum and cause a localized peritonitis. It is the experience of most surgeons, however, that the accidental passage of a few sero-muscular stitches into the lumen of the bowel is usually not followed by the death of the patient if the general condition is good. There appears to be more security in a stitch which penetrates all the coats of the intestine than in the sero-muscular which includes only a part of the intestinal wall. There is also less danger of obstruction where a single row of stitches is used because there is less invagination of the intestinal wall. In operations performed on dogs by junior medical students in the surgical laboratory of the University of Michigan, there were as many recoveries after using the Connell suture for end-to-end anastomosis of the intestine as with two rows of stitches.

None of these methods, however, can be considered as aseptic, as the danger of infection from the lumen of the bowel is constantly present. During the last five years various attempts have been made to devise a method of anastomosing the intestine without opening the lumen, thus avoiding contamination of the field of operation with the infective bacteria which may be present in the intestine. J. Schnitzler, of Vienna, has recently criticised some of these methods on the ground that the present methods of performing resections of the stomach and intestine are followed by a very small mortality and that this would not be materially reduced by avoiding infection from the lumen. It seems rather curious that a prominent surgeon should announce that no further improvement is possible in operations upon the intestine.

Schnitzler maintains that the ordinary bacteria present in the stomach and intestines are not pus-producing germs and could not produce peritonitis. If this were true it would hardly be necessary to take any precautions to avoid infection from the lumen. We know, however, that the less opportunity there is for infection from the lumen, the greater the proportion of recoveries. Injuries of the stomach and intestine, which are repaired in six to twelve hours, generally result in recovery because the infection is either not virulent or sufficient time has not elapsed for peritonitis to develop. It is true, as Schnitzler says, that there are very few bacteria normally present in the stomach and upper part of the small intestine, because of the rapidity of peristalsis. In the lower two feet of the ileum and at the

ileo-cecal valve the germs become more numerous and virulent. There are some pus-producing germs always present in the intestinal tract, according to bacteriologists, and the colon bacillus which is constantly present in the large intestine may, under certain conditions produce pus, as in acute appendicitis. The danger of infection from the lumen, therefore, is always present. Cancer and tuberculosis may also be disseminated in this way. Another factor of importance is that injury of the mesentery may result in interference with the blood supply in end-to-end anastomosis and consequently gaping of the wound may follow from necrosis. In lateral anastomosis

Figure 1.

there is greater possibility of infection from the lumen, but there is less interference with the blood supply than in end-to-end anastomosis, which accounts for the higher mortality in the latter.

The failure to include the mucous membrane in the suture as proposed in some of the more recent methods of intestinal anastomosis has been thought by some to be the possible cause of subsequent gastric or intestinal hemorrhage. On the contrary, compression of the intestine with an enterotribe and resecting it with the actual cautery is generally believed to be successful in preventing hemorrhage because it closes the mouths of the bloodvessels. It is also urged by Schnitzler that stenosis may result from lack of suture of the mucous membrane. This was demonstrated in one of my experiments. It can be prevented, however, by making oblique incisions through the intestinal wall. Madelung, in 1881, showed that the oblique incisions provide a better blood supply at the free edges and allow for the excess of inturned edge at the mesenteric border.

Rostowzew, in 1906, was the first to propose a method of performing an aseptic anastomosis of the intestines or stomach. He devised quite a complicated set of instruments for this purpose. By means of an enterotribe he compresses the intestine at the proposed point of resection, then uses a strong clamp to compress the intestine at a short distance from here. The blades of these instruments are then

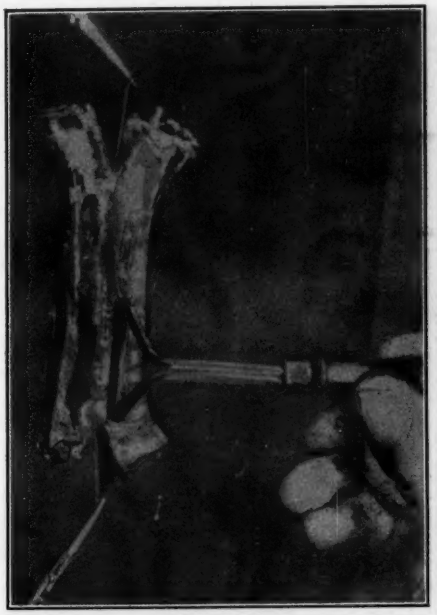

Figure 2.

heated with the actual cautery sufficiently to sear the edges of the intestine together, leaving depressions and elevations upon the intestinal wall arising from the projections and grooves on the blades of the instruments. These clamps are so constructed that the blades can be separated from the remainder and left in position upon the intestine. Next he cuts through the portion of intestine included between the two clamps with the actual cautery, thus searing the edges of the several intestine and preventing the escape of the contents. The incision is then prolonged into the mesentery after ligating the vessels. The same procedure is carried out at the other end of the proposed resection. Finally the edges of the intestine to be joined are brought together and sutured by means of a series of interrupted sero-muscular stitches passed over the clamps, which are then carefully removed and the edges of the intestine remain seared together. The lumen is restored by pulling apart the sutures, which are oppositely placed, after grasping each group of three at one time with a pair of hemostatic forceps. These stitches are finally tied and the operation completed.

This method cannot be considered as practicable on account of the complicated set of instruments which is required. Moszkowicz has modified the instruments of Rostowzew, but the principle is identical.

Parker and Kerr, of Johns Hopkins University, have devised a very simple method of aseptic anastomosis of the intestine which can be carried out with a few needles and thread and a few ordinary intes-

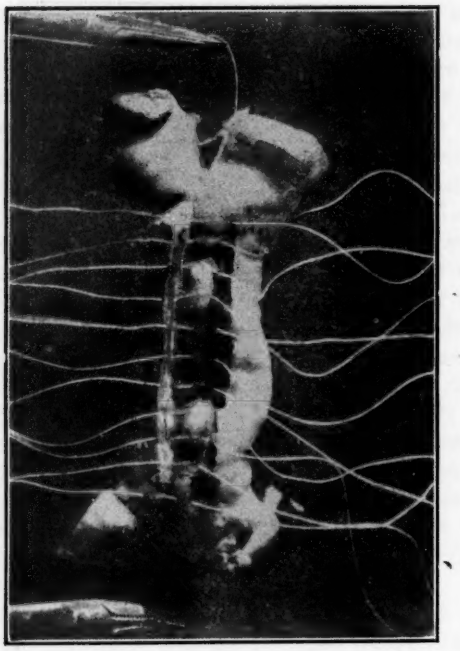

Figure 3.

tinal clamps. The intestine at the proposed point of resection is compressed by two narrow-bladed crushing forceps at first placed in actual contact and then slightly separated. By this process the walls of the intestine are glued together somewhat. Then the portion included between the clamps is divided by the actual cautery or knife. The mesenteric vessels which supply the portion of intestine to be resected are ligated and the intestine at the opposite end of the proposed resection is also divided between two clamps in the same way. The authors then apply their so-called basting stitch to each end of the divided intestine. This stitch is a continuous sero-muscular one applied loosely over the clamp. The ends of this suture are not tied because they must be removed later. Next the clamp is carefully removed and by pulling on both ends of the basting stitch one can invaginate the end of the intestine perfectly, thus preventing the escape of any of the contents of the bowel. Then a series of interrupted sero-muscular stitches is used for joining the divided ends of the intestine. After these are tied the basting stitches are removed by pulling on one end of each.

At first the tendency is to invaginate too much of the bowel wall, especially in the case of resection of the small intestine. My first two experiments with this method were failures on this account, resulting in the death of the dogs operated upon from failure of the sutures to hold securely under so great a tension. The result was perforation of the bowel at the point of anastomosis. This was overcome in later experiments by taking the sutures nearer the edges so that no more dogs died on this account. Another complication in one experiment was retraction of the mucous membrane with accumulation of the contents of the bowel at the point of suture, resulting in stricture which caused the death of the animal about two months after the operation. Upon section of the abdomen after death the intestine immediately above the anastomosis was found to be much dilated and filled with a mass of hair firmly matted together. A flap of mucous membrane had not united with the remainder. Microscopical examination of this area showed it to be a chronic ulcer or wound scar tissue with active inflammation and marked glandular hyperplasia. This complication was afterward always avoided by using the oblique incisions of Madelung through the bowel wall. This incision is made at an angle of forty-five degrees to the axis of the intestine and gives a lumen double in area to that of the incised bowel.

In a case requiring a lateral anastomosis the method of Parker and Kerr is varied somewhat in order to be sure of grasping the mucous membrane in the clamp. Three needles are plunged into the lumen of the bowel at its free border and brought out again about one-quarter of an inch from the point of entrance. They are placed about one-half an inch apart, parallel and at right angles to the bowel axis and plane of the mesentery. The clamps are then placed beneath these needles so as to grasp the intestinal wall between the points of entrance and exit of the needles and the operation is completed the same as in end-to-end anastomosis. This operation cannot be regarded as aseptic, as the lumen of the bowel is penetrated and infection may be carried to the peritoneum in this way.

Another method of aseptic intestinal resection is that of F. B. Walker who uses a purse-string suture to prevent the escape of the contents of the intestine during the operation. These purse-string sutures are tied with a slip-knot so that they may be readily removed after the anastomosis is completed. The section of the intestine is made with the actual cautery which sears the edges together, thus pre-

venting the escape of the contents of the bowel. This method seems to require the invagination of more tissue than that of Parker and Kerr and is, therefore, more liable to be followed by obstruction from stricture of the bowel. It cannot be used for an aseptic lateral anastomosis because an opening has to be made into the lumen of the bowel.

E. Capek, of Bohemia, has proposed an operation which is very simple and can be applied both for an

Figure 4.

aseptic lateral anastomosis and a gastro-enterostomy. The communication is not established at the time of operation, but in about twenty-four hours. The loops of intestine which it is necessary to anastomose are joined with a continuous sero-muscular stitch applied near the mesenteric border. About ten millimeters from this suture an incision is made of the length of the proposed anastomotic opening and within the limits of the length of the suture. This incision is made only through the serous membrane and muscular coats exposing the mucosa. The length of the incision varies with the portion of the intestinal tract involved. The field of operation must be kept free of blood by ligating the vessels and applying a hot sponge to control the capillary ooze so as to avoid cutting the mucous membrane.

The edges of the incision are then spread two to three millimeters apart and the submucosa and mucosa cauterized with the author's cautery. (See figure I). This is a triangular-shaped instrument made of heavy steel wire about three and eight-tenths millimeters in diameter. The length of the cautery is three to five centimeters. The hemorrhage must be stopped before the cautery is applied or the blood will cool off the instrument so rapidly that the cauterization will be incomplete and the communication will be established much later than usual or remain incomplete with the formation of a septum. It is necessary to have several of these cauteries heated at one time in order to perform the operation without any delays.

The cautery is applied at a dull red heat with moderate pressure until the smoke ceases to arise

Figure 5.

and one must not remove it to apply it again, but it should be applied continuously until the cauterization is complete and it must not be allowed to burn into the lumen of the bowel. The length of time for the application of the cautery is twenty to twenty-five seconds. When the area is properly cauterized it looks like thin parchment. In the case of an intestine with very thin walls the cautery is applied directly to the serosa and less pressure is exerted than on a normal intestinal wall or it will burn through into the lumen of the bowel. (See figure II.)

The cauterized areas are brought into perfect apposition by means of two rows of interrupted sero-muscular stitches, one placed internal to them and the other external so that the corresponding edges are accurately apposed. Finally the whole wound is covered in with a continuous sero-muscular stitch. (See figures III and IV.)

I have done five lateral anastomoses and two gastro-enterostomies by this method with success. The necrosis which is set up as a result of the cauterization of the mucous membrane causes it to yield within twenty-four hours, thus establishing the communication. The walls of the opening are generally smooth and there are no necrotic masses. (See figure V). It requires some experience with the operation

upon animals to be able to recognize the proper depth of cauterization. There is no doubt that the method can be readily applied to similar operations upon man.

The results of these experiments, which have extended over a period of two years, seem to indicate that the method of Parker and Kerr is the most practical for end-to-end anastomosis, and that of Capek for lateral anastomosis and gastro-enterostomy.

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THE RESISTANCE OF THE PATIENT.

So far as we can now see, the patient's side of the struggle can be fortified by, First: Conserving every atom of vitality, before, during and after the operation. Second: By building additional vitality. This increase in the natural resistance of the body has been so admirably worked out by the internists in the treatment of tuberculosis, that in every case of infection in which such a course is practicable, I put patients upon the dietetic and hygienic regime used in the treatment of tuberculosis. A subacute or chronic pyogenic infection is just as favorably influenced by this regime as is a tuberculosis infection. Third: The use of vaccines.—GEORGE W. CRILE, in the *Wisconsin Medical Journal.*

ON THE SURGICAL RELATIONS OF THE INTESTINAL GASES, WITH DEDUCTIONS CONCERNING PRE- AND POST-OPERATIVE TREATMENT.*

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To avoid one of the most trying post-operative conditions with which the abdominal surgeon has to deal—meteorism, a thorough acquaintance with the physiology of gas production is called for. The literature of the subject, unfortunately, is scanty. Little experimental work has been done. The conclusions of those who have investigated along these lines are decidedly contradictory, and many important questions remain unanswered.

Intestinal gases are very important in the production of regular bowel movements. They stimulate peristalsis and tend to keep the intestines distended, contributing much to the looseness of the ingesta and of the fecal matter. Lacking the normal amount of flatus, the fécal masses would not pass along the intestinal lumen readily and would irritate the mucous lining. We all recognize the important office the flatus fills as an aid to defecation. It furnishes the motor impulse without which easy defecation is impossible.

Fries, speaking of the significance of the intestinal gases, says:—"We can best conjecture and ascribe to them a rôle of usefulness in the scheme of digestion and assimilation of the food, in that this gas mixture may serve as a regulating agency to regulate the growth of micro-organisms in the digestive tract, checking the growth of some, preventing the growth of others, which may find their way into the intestines."

The gases principally found are carbon dioxide, marsh gas, nitrogen, hydrogen and hydrogen sulphide. The various sources of the intestinal gases are summed up by Evans as follows:—"(1), Air swallowed; (2), Gases transferred from or secreted from the blood; (3), Gases arising from the fermentation of food stuffs." Although we are apt to consider the fermentation of food as the only source of the gas, it is likely that the amount furnished by the air swallowed and that secreted from the blood constitute no inconsiderable portion of the total.

Gastric flatulence is thought to be caused frequently by the air swallowed with the food or saliva. In support of this opinion Evans has shown that the nitrogen in the gases of such cases occurs

* Read before the Western Surgical and Gynecological Association, December, 1908.

in about the same proportion as in atmospheric air, and that carbonic acid gas is present in like proportion as the oxygen in the air.

Furthermore, Evans concludes that "the rapid production of intestinal gases after abdominal operation, in peritonitis and gastritis, in hysteria, in certain affections of the lungs and heart, renders the theory of an excretion of gases from the mucous membranes of the intestines exceedingly probable."

Fries, in a series of experiments on his own person, found that the composition of the gas discharged from his rectum was, as follows:—

CO_2 = 10.3 per cent. by volume.
O = 0.7 per cent. by volume.
CH_4 = 29.6 per cent. by volume.
N = 59.4 per cent. by volume.

He believes the large proportion of free nitrogen to be due chiefly to the atmospheric nitrogen swallowed as air with the liquid and solid food and with saliva, the oxygen having been absorbed into the blood or to some extent having been supplied to living organisms in the alimentary canal. That the food ingested is the most important source of the intestinal gases is probable from the fact that, when an exclusively meat diet is used, the proportion of free nitrogen in the rectum is more than three times as great as when a vegetable diet is made use of. It is well known that certain articles of food cause the elaboration of large quantities of gas, while others have the opposite effect.

According to Boas, the amount and kind of gas formed vary with the diet and the segment of bowel. It is formed most rapidly where active fermentative changes occur—*i. e.*, in the upper segment of the small intestine. Less gas is formed in the lower portion of the small intestine and very little in the large bowel. If all the gas formed remained for any length of time in the intestines, painful tympany would quickly result. A certain amount is discharged from the rectum daily. Certain of the gases, notably oxygen, are absorbed into the blood and several investigators (Regnault, Reisert, Tacke, Kuntz and others) have demonstrated the presenc of marsh gas and other intestinal gases in the expired air (Boas).

In perfect health there is a definite relationship between the amount of gas produced and the amount eliminated. When, because of a gas-forming diet, an unusually large amount is produced, a correspondingly large amount is passed from the rectum, absorbed into the blood, and eliminated by the lungs. When a diet low in gas-producing quantities is ingested, there is a corresponding decrease in the elimination. The balance is maintained and the intestinal canal contains regularly the amount needed to stimulate peristalsis and to serve mechanically to speed the bowel contents on their way.

If elimination is not quite up to normal, or if gas production is excessive, a note of alarm is sounded by uncomfortable distention. If at this time a cathartic be taken or the amount of ingesta reduced, the normal condition is soon restored.

The rôle which the microorganisms play in the elaboration of gases is little understood, but it is supposed to be an important one. Many physiologists claim that the presence of certain kinds of putrifying as well as other kinds of bacteria are absolutely necessary for continuous good health and normal digestion. If conditions arise inimical to the proper development and activity of these microorganisms, more or less serious results will follow. The bacterial activity is supposed to aid in the production of certain enzymes necessary in normal digestion as well as in the elaboration of gases.

In refutation of the opinions advanced that much of the nitrogen and oxygen (carbonic acid gas) in the alimentary canal result from swallowed air, Evans, in some experiments with fishes, found that the gas present in the sound of the cod, not connected in any way with the intestinal canal or with the external air, and therefore entirely a product of the vascular lining, consisted entirely of oxygen and nitrogen in the proportion of about 15 per cent. of the former to 85 per cent. of the latter. He asserts that we have no right to assume that when we find nitrogen in about the same proportion as it exists in the air, that that nitrogen is the nitrogen of the air. It is thus seen that the views of different observers are sadly at variance.

Nothnagel is of the opinion that by diffusion carbonic acid gas may pass from the bloodvessels of the colon into the intestinal lumen. This would, according to Pick, in a measure explain the sudden occurrence of meteorism after emotional excitement, as it would not be impossible that psychic irritation might influence the vasomotors to such an extent as to favor diffusion.

On the other side, we find Lauder Brunton and Cash, who explain the flatulency of emotional excitement as due to diminished gas resorption by the vessels of the intestinal walls from inhibition of the venous circulation. Their experiments, at least, show that carbonic acid gas and sulphuretted hydrogen, which are soluble in water and in alkaline fluids, are taken up by the blood. It is thus seen

that many questions in the physiology of gas production and elimination are yet unsettled.

A clear understanding of the pathology is manifestly impossible as long as the physiology is unknown. Some experimentation has been undertaken to elucidate the cause and process of abnormal gas formation, but only a few facts have been fully determined.

Normally, as has been said, a balance is maintained between the quantity of gas elaborated and the quantity evacuated. If, for any reason, the production greatly exceeds the elimination, flatulence and distress result. If any obstructive lesion of the bowel or paretic condition of the intestines interfere with the expulsion of the gas from the rectum, or if circulatory or other disturbance of the coats of the intestines retard or stop the absorption of gases, the effect is very serious.

Boas states that, under pathological conditions, the quantity and composition of gases in a given segment will vary from the normal. It will depend on the nature of the contents, the motility of the bowels, and the condition of the circulation.

In estimating the manner in which gas accumulations manifest themselves in the presence of various pathological conditions with which we have to deal, a rather full abstract of the experimental work of Kader will be helpful. He found that in the colic of horses circulatory disturbances were a frequent and important etiological factor. Ninety to ninety-four per cent. of horses suffer from aneurism of the anterior, or, more rarely, the posterior mesenteric arteries and their branches. The aneurisms cause thrombosis and emboli of the various ramifications of these arteries, which lead, unless a sufficient collateral circulation is established, to the following changes: arterial anemia in the excluded area, followed by a venous stasis with serous and hemorrhagic transudation into the intestinal wall and lumen as the result of the lessened blood pressure. This condition leads directly to paralysis of the intestines.

The latter in turn produces stagnation of the intestinal contents with abnormal fermentation and abundant development of gases, and further is the cause of axial torsion and invagination of the intestine because the activity motile healthy portions of intestine wind around the passive portion and become invaginated therein.

Kader produced in dogs, cats, hogs, sheep, rabbits and horses various forms of intestinal occlusion and studied the meteorism in relation to its etiological factors of production, localization and size. He divided his experiments into four groups:

1. In which the intestinal loop with its mesentery was strangulated.

2. In which a certain portion of the intestine was entirely stenosed at two widely separated points, without injury to the mesenteric vessels.

3. In which circulatory disturbances were occasioned in a section of intestine by ligation of its mesenteric vessels, without in any way affecting the intestinal lumen.

4. In which the lowermost loops of the ileum were subjected to circulatory disturbances by ligature of their mesenteric vessels, as in group three, and by stenosis of the loop at the ileum, immediately above, any influx of intestinal contents from above being prevented.

Results of the first group in which intestinal loop with mesentery was strangulated, a, moderately, b, completely. An almost immediate symptom in moderate strangulation of an intestinal loop is a dark, reddish-blue discoloration, increasing in intensity. It is the result of the venous hyperemia which increases continuously, leading to venous stasis, extravasation of blood from the vessels into the intestinal walls. The latter grow turgescent, become thickened to twice or more their normal thickness, and are firm to the touch. The blood, originally only serum, transudes in great quantities through the mucosa into the lumen of the intestine, gradually liquifying the contents. A few seconds, at the most a few minutes, after strangulation, there occurs a string-of-pearls-like contraction in the strangulated loop. This recedes in a few minutes and from that moment on gradual paralysis continues synchronously with the increase of the venous stasis. Development of gases occurs in the intestinal loop. It becomes distended and tense. Its circumference is almost doubled, in some cases tripled and more, due to development of gas, transudation of serum into the intestinal lumen, and thickening of the walls. All of the above-mentioned symptoms are fully developed within four to eight hour after strangulation. Development of gas occurs in the strangulated loop and becomes intense even when the loop at the time of strangulation contains but little fecal matter, or when as much of it as possible has been removed. Thromboses occur within the first few hours after strangulation. The walls of the loop become inflamed. In the course of time circulation is entirely stopped and gangrene of the loop follows.

The afferent and efferent loops next to the stran-

gulated portion of intestine contract spasmodically a few minutes after strangulation has occurred. They are found in this contracted condition, unchanged in any other way, when the strangulated portion has already undergone the changes above described. The loop immediately above the strangulation begins gradually to become distended with gas. The lower one remains more or less contracted till death. In cases in which strangulation had existed for forty-eight hours the distention in the loop above the strangulation was by no means as great as it was in the strangulated portion within eight hours after strangulation had been produced. Where strangulation had existed for more than two days the loop above was found dilated only in its lower portion. The contractility of the distended intestine above the strangulation was reduced to some extent, but the impairment of the musculature was very slight, as irritation by pinching the gut with forceps was always followed by firm contractions.

Peritonitis existing at the time of strangulation or occurring synchronously seems to inhibit to a marked extent the development of local meteorism of the strangulated gut, but, on the other hand, to further general meteorism.

In the second series (b) of the first group strangulation was complete and the gut immediately assumed a pale and cyanotic hue. Finally it became dark ash-gray to greenish. No transudation into the lumen or into the peritoneal cavity occurs; in the loop of intestine one may find only slight quantities of fluid and rarely bloody contents. The peritoneal cavity contains large quantities of fluid only in the cases in which general peritonitis has set in. The gases distend the incarcerated portion of the gut; the walls become tense, the circumference is increased. All this is quite marked, but not as much so as in the first series of cases. Degeneration and perforation of the intestinal wall occur. Paralysis of the musculature occurs also and more rapidly than in moderate strangulation. At the beginning of complete strangulation spasmodic string-of-pearl-like contractions are more intense than in cases of moderate strangulation but of shorter duration. The loops of intestine above and below the strangulation differed from the same segments in moderate strangulation only in that the contractions set in earlier, were more intense and spasmodic and lasted longer.

Results of the second group in which an intestinal loop has been completely stenosed at two points without impairment of the circulation. In these cases practically no gas production occurred. In double stenosis of an intestinal loop containing fecal matter gas develops, it is true, but in such small amount that it could not be designated as distention. The contractility of the stenosed gut is but slightly affected, if at all, at the end of forty-eight hours. The circulation does not incur any notable changes. The loop of intestine above the upper stenosis becomes slightly and uniformly distended; this distention is always greater than that of the stenosed, empty or filled loop. The circumference of the upper loop does not increase to twice its normal size, nor does it amount to palpable distention. The portion of the gut below the lower stenosis is usually unchanged; it may be slightly contracted. Double stenosis of an intestinal loop did not prove as acutely deleterious to the life of animals as did stranguation; nor was gas produced in nearly as great quantity.

Results of the third group in which circulatory disturbances were produced by ligation of mesenteric vessels without mechanical impairment of the permeability of the intestine. Simultaneously and parallel with the increase of the circulatory disturbance, venous hyperemia, there appeared decrease of contractility, finally paralysis; thickening and induration of the walls due to transudation of the blood into the intestinal wall; finally gangrene; transudation of the blood into the intestinal lumen and into the abdominal cavity; gas formation. In some of these experiments Kader observed that the transition from unchanged to changed intestine was definitely marked, and this is explained probably, by the experiments made by Litten on dogs, which showed that the superior mesenteric artery comports itself like a terminal artery.

Results of the fourth group in which the ileum was ligated or stenosed at one point only and the mesenterium of the portion of the intestine below the stenosis firmly ligated as in the cases of the third group. It was found that interference with the circulation of an intestinal loop, venous stasis, produced meteorism, even though gas and fecal flux from above are cut off, and when the lower exit is open. Gas production takes place in a section of intestine in which the circulation is considerably impaired, in the absence of larger amounts of fecal masses. Increased quantities of fluids and gas in the lumen, thickening of the wall, loss of contractility, and in fact, all changes in the intestinal loop in which a disturbance of the circulation has been effected, in the sense of a venous stasis, may be primarily traced to these circulatory disturbances as the main, perhaps only, cause.

Kader found in all cases of strangulation of an intestinal loop that gases formed in a few hours. The etiology of the gas-meteorism is the circulatory change or impairment. The presence of intestinal contents in the loop at the time of strangulation influences the quantity of gas production, but is not essential for its production. The experiments of Magendie and Gerardin, as well as those of Tuntz, verify the author's results. According to Magendie and Gerardin there occurs, especially in certain marked, acutely arising cases of meteorism with intestinal occlusion, an exhalation of gases from the blood into the lumen of the intestine.

Tuntz and his pupil, Tacke, assume that in normal conditions from ten to twenty times as much of the intestinal gas is removed through the lungs as per anum. But when there is impairment of the circulation there form in the affected section of gut, gases from putrefaction and decomposition products of the intestinal contents, as usual, but they cannot be resorbed or removed rapidly enough. This gives rise to local massing of gases, local gas-meteorism.

A critical review of cases of intestinal occlusion reported in the literature shows that the distended portions of the intestine presented various grades of development of venous stasis, and the lumen of the intestine contained partly bloody fecal fluid, partly gas. If it is assumed that without strangulation of the mesenteric vessels there can be no circulatory disturbances it would carry one far afield. Kocher showed almost thirty years ago in an article on strangulated hernia, that the circulation in the intestinal wall could be affected by mere distention of the gut without direct involvement and impairment of the vessels of the mesentery, and he has shown in experiments on dogs, that ligation of a section of intestine above and below, and injection of fluids or air produces a marked venous stasis, in the section of gut involved, while the mesentery is in no way affected.

Schmidt states that it is by no means necessary that in abnormal collections of gases in the intestines there must always exist a pathologic increase of intestinal fermentation; if it is present, it is usually not the cause but the result of the stasis. He further asserts that impaired friction of the intestinal musculature, or stagnation of the contents from other causes is the most important and the most common cause of abnormal intestinal gas production. It may be said of the intestine as of the stomach, that pathologic gas formation without disturbance of muscular activity is exceptional.

In paretic conditions the intestine becomes distended and this leads to diminished expulsion of gas, as by the distention the resorption into the bloodvessels is interfered with and the contractility of the intestinal musculature is impaired. Thus occurs, as Nothnagel puts it, a vicious circle, whose primary cause must be sought in muscular weakness.

The apparently contradictory conclusions of different experimenters need not be so confusing if we pin our faith on one primary cause of intestinal meteorism—a failure in resorption of the intestinal gases by the blood, plus a failure of the gas being carried along the intestinal lumen by active peristalsis. This may be brought about by a circulatory disturbance in the mesenteric artery or its branches, or by an occlusion, followed by primary distention and a circulatory disturbance of the vessels of the intestinal wall.

Ortner describes a case of arteriosclerosis of the intestinal vessels, especially of the superior mesenteric artery, in which tympany and pain occurred regularly two or three hours after meals. He attributes this directly to spasm of the intestinal vessels, occurring when the functional requirement of the intestine was increased, causing, because of the diseased conditoin of the arteries, temporary arrest of the circulation in the vessel area involved resulting in decrease or failure in gas resorption. This same point was recently brought out by Dr. H. L. Aiken in a paper read before the Omaha-Douglas County Medical Society, in which a case was reported with similar symptoms and like conclusions. In the discussion Drs. Bridges and Dunn reported cases of a similar nature.

It is probable that the increased meteorism found in cases of gastroptosis and enteroptosis is due not only to lessened peristaltic power because of a lowered muscular tonus, but to a failure in normal resorption of gases due to diminished circulatory activity because of the elongated mesentery.

The effect of exposure of the abdominal viscera to air, sudden cooling, rough handling, etc., though of great importance in all abdominal work, has seldom been the object of exact experimental research. The crucible of practical experience, the final court of appeal in any surgical question, has been the chief factor in the elucidation of knowledge bearing on this subject.

The work of Cannon and Murphy is of so much interest that it cannot be omitted here. These workers performed experimental sections on cats, first seeking to learn the immediate effect on the movements of the stomach. They fed the cat through a

stomach tube 25 c.cm. of mashed potatoes in which had been mixed 5 grms. of subnitrate of bismuth, in order to ascertain by means of the fluroscope the rapidity with which the food passed out of the stomach and along the intestine. The usual operation was resection of the intestine with end-to-end suture. It was found that in the control animal, one-half hour after the food was administered, quite a quantity had already passed the pyloric orifice. In the animal that had undergone intestinal resection 18 cm. below the pylorus, not any had passed from the stomach at the end of five hours. At the end of six hours some had passed, but not as much as during the first hour after feeding the control animal. This demonstrates complete cessation of peristalsis of the intestines for five hours after resection. During these five hours gastric peristalsis seemed normal but the pyloric sphincter was tightly closed.

The experimenters draw from this a striking lesson on the conservatism of nature. It takes about five or six hours for a gluey exudate to form and to render efficient support to the newly united intestine. "It is certainly very striking that the period of primary repair and the period during which the food is prevented from entering the injured intestine should so closely coincide." (Cannon and Murphy.)

They also found that when the intestinal suture was made near the ileo-cecal valve the food began to leave the stomach in two hours, but it accumulated in the upper segment of the small intestine above the point of suture and none of it entered the large intestine until after seven hours. From this they make the following inference: "It may be that at any point along the alimentary canal injury produces a functional blocking effect which saves the injured part from activity until a certain degree of repair has taken place."

Cannon and Murphy also made experiments on post-operative ileus, an effort being made to find out what factors were most hostile to post-operative intestinal peristalsis. They sought light on the following points: (1) The effect of etherization; (2) The effect of exposure to the air; (3) The effect of cooling; (4) The effect of handling.

(1) *The effect of etherization.*

Etherization was found not to stop the movement of food, but to make its progress from the stomach and along the intestine slower than normal. Normally food was found to reach the large intestine in two to three hours, while in the etherized animal it took four, five and six hours to pass the same distance.

(2) *The effect of exposure to the air.*

Under ether a long median abdominal incision was made, the borders of the cut being widely retracted, in order to permit the air to come freely into contact with the stomach and small intestines, care being taken not to touch the viscera. As soon as the serosa became dry and ceased to glisten the abdomen was closed. The emptying of the stomach was not much delayed, not so much as after simple etherization, but the food did not reach the large intestine until six hours after it was administered.

(3) *The effect of cooling.*

An incision was made and, in order to cool the serosa without drying it, normal salt solution at a temperature of 20° C. was injected at intervals. The stomach emptied itself only slightly less quickly than normally and the food reached the large intestine in three hours.

(4) *The effect of handling.*

Four methods of handling were made use of: (a) gently, under normal salt solution; (b) gently in peritoneal cavity; (c) gently, in air; (d) severely, in air. Under the first three conditions no food left the stomach until the end of three hours and the progress along the small intestine was very slow. In only one case did the food reach the large intestine in seven hours. Gentle handling in air produced the greatest amount of slowing, in one case not all of the food having reached the large intestine in 26 hours, while in the control animal this was accomplished in five hours. Thus even gentle manipulation of the stomach and intestines seems to be a more important factor in the production of post-operative intestinal inactivity than etherization alone, exposure to air alone, or cooling alone.

I have found in my clinical work that post-operative tympany and trouble in securing intestinal evacuations have decreased in proportion to the care used in keeping the operating room warm and the exposed coils of intestines protected by pads wrung out of hot normal salt solution. Even the slighter abdominal sections done with equal care in handling, but in a cool operating room and without the protection of hot pads have been followed by a stormy period of tympany and other disagreeable symptoms which accompany this condition.

What to do when much tympany is present before the operation is a matter of a great deal of importance. Can acute-operative treatment decrease the tendency to post-operative tympany? It has been shown in the experiments quoted that one of the

factors in gas-formation is fermentation of the food residue. To obviate trouble from this cause the use of laxatives before operations is wise but it is liable to be overdone. A very brisk cathartic, acting violently, not only clears out the contents of the intestine but exhausts the contractility of its muscular coat. To how great a degree this is true and how long the exhaustion of violent peristalsis lasts, I do not know; but it has been a matter of frequent observation that a lessened peristalsis follows a too brisk catharsis.

Post-operative treatment should be as simple and natural as possible. No starvation, unless the stomach or small intestine is in a condition to prohibit food, but also no forced feeding at first. The weakness which follows denial of all food, and the discomfort and disgust of too much should alike be avoided.

Water given as soon as the patient calls for it has been found greatly to promote comfort and a feeling of well-being. It also seems to encourage post-operative peristalsis. This need for water is natural and its prohibition seems now to have been the refinement of cruelty. The tissues are dry from the preliminary laxatives and loss of blood. Water serves not only to quench thirst but to dilute the anesthetic which collects in the stomach and its early use is humane as well as beneficial.

Something to promote early restoration of peristalsis is of great importance if a patient would pass a comfortable convalescence. For fourteen years I have made a routine use of strychnia hypodermatically after operations, not so much as a heart stimulant as to encourage peristalsis. When it was first made use of it was a matter of frequent remark in the hospital that trouble from post-operative tympany was of rare occurrence.

Of late, cases that give trouble from unusual accumulation of gas have been treated with salicylate of eserine in doses of 1/60 to 1/40 gr. hypodermatically. Its use has been followed often by an early passing of gas and there can be no doubt that it promotes peristalsis to a remarkable degree and is of great use when the tympany is due solely to muscular atony. Vogel also claims that it prevents intestinal adhesions. An absolute contraindication to the use of eserine is mechanical obstruction and it should be avoided just the same as one avoids cathartics when mechanical obstruction is present. When rightly used, eserine is an important advance in the treatment of atonic tympany.

The points that practical surgeons need especially to have in mind are (1) To have as little fermentable substance as possible in the intestines before operation; (2) to do as little as possible during the operation which will interfere with the normal circulation in the intestinal wall. There should be a minimum amount of handling and resulting trauma. (3) To leave the intestines in the best condition for active peristalsis. Long exposure and much cooling are inimical to active peristalsis.

TWO CASES OF SEPTICEMIA FOLLOWING SUBMUCOUS RESECTION OF THE NASAL SEPTUM; ONE DEATH, ONE RECOVERY.

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I wish to report the two following cases, because I believe they present unusual complications.

The submucous resection as performed now-a-days, throughout the United States, is considered more or less of a harmless procedure. If any complications have occurred, they have not been reported in the literature. Besides looking up references, I have also made personal inquiries in New York City and each operator has claimed that he has never had such a serious complication as sepsis following a submucous resection.

I find some fifteen references in the literature to abscess of the nasal septum, which is supposed to be a rather rare condition. Most of these cases followed traumatism. Wm. L. Culbert in the *Transactions of the Laryngological, Rhinological and Otological Society,* Vol. 9, reports a case of abscess of the septum with symptoms of septicemia. In the discussion of this case, George L. Richards cites the case of a physician who had an abscess of the septum followed by sepsis. Both cases recovered after incision into the abscess cavity. L. C. Cline, in Vol. 3, of the *Transactions* of this same Society reports the case of a young girl who was treated for typhoid fever for weeks. Subsequently it was determined that she had had some injury to the nose. An abscess of the septum had developed which finally broke down, with subsequent recovery.

The two cases here reported occurred within a period of a few weeks in an experience of some hundreds of cases, either operated upon by myself or by those with whom I am associated.

CASE I.—Margaret M., 18 years of age, stenographer, single. For the preceding two years she had been in such poor health that she had been unable to work. Had had no cough, appetite fair; general lassitude. Had had some obstruction to

nasal respiration. She was told she had adenoids and came to the clinic for adenoidectomy.

The girl was anemic but seemed to be in fairly good physical condition. Examination of the nose showed a deviation of the septum to the right anteriorly, to the left posteriorly. Both middle turbinates were hypertrophied. Examination with the pharyngoscope showed that no adenoids were present. Examination of the throat and larynx, negative. Transillumination, negative.

She was told that an operation on her nose was necessary and she therefore returned to the clinic two days later (May 24th).

The septum was anesthetized with pledgets of cotton saturated with cocain (4%) and adrenalin (1/2000). More thorough anesthetization was accomplished some twenty minutes later with cocain crystals. As the patient seemed to be in such a nervous condition, having intermittent jerky movements, particularly of the right side of the body, I decided to perform the operation in the recumbent position.

The operation itself was particularly easy. There was no traumatism as far as I could ascertain other than the incision in the anterior part of the mucosa. The nares were packed lightly with gauze impregnated with bismuth subnitrate powder. The entire operation consumed less than one-half hour.

The patient returned to the clinic two days later to have the packings removed. She complained of frontal headache, a symptom so often complained of when packings have been in the nose for any length of time. There was only moderate bleeding after the packings were removed. There was considerable edema of the mucoperichondrial flaps and a frothy blood-tinged serous discharge. I told the patient to keep the nose clean with peroxid of hydrogen and to return in two days.

The day she was to return to the clinic, I was informed that for the past forty-eight hours the headache had increased considerably, that her fever had reached 104° F., that she had had a chill lasting a half hour, and that she was so ill that it was impossible for her to leave her bed. I went to see her immediately. The girl was rolling around the bed in the agony of a terrific headache. Her face was drawn with suffering, but at that time there were no external indications of pus infection. The nares seemed to be perfectly clear. Temperature 104.2°, pulse 120, respirations 20. An ice-bag was applied to the head, the nares were irrigated with an alkaline solution from a fountain syringe, the return fluid containing only a small amount of mucous. A large dose of morphine was administered, which gave temporary relief.

I was again sent for the following evening. A decided change for the worse had taken place. The temperature had been remittent and another chill had occurred. There was slight edema of the eyelids on the right side, slight exophthalmos and some swelling of the right side of the face. There was tenderness over both frontal sinuses.

I determined to make an immediate exploration of the nasal cavities. Unfortunately the dry cells for my head lamp did not give very good illumination. It was impossible to see beyond the swollen and edematous mucous membrane of the septum on either side. I opened up the incision in the septum on the right side. The edges of the wound looked unhealthy and boggy. A thorough exploration was made between the two septal membranes with a Freer periosteal elevator and cotton applicators. I was able to pass the instruments well up toward the cribriform plate. Not a drop of pus was found. I then explored the regions of the middle turbinates with probes and applicators. Only thick tenacious mucous adhered to the applicators.

I naturally suspected a septal abscess which had finally extended to the cavernous sinus. At that time there were symptoms of beginning cavernous sinus thrombosis. I advised the removal of the patient to a hospital immediately. That night she was taken to New York Hospital and placed on Dr. Hartley's service. The following notes were kindly made for me by Dr. Munroe, of the New York Hospital staff.

The ambulance surgeon found the patient's temperature 104°, respirations rapid, right eye more prominent than the left (exophthalmos). There was also a swelling in the region of the right parotid gland. She complained of terrific headache. The neck was somewhat stiff and could not be completely flexed. Kernig's sign slightly positive. No Oppenheim or Babinski phenomenon. Pupillary reflexes equal. Chief complaints, headache, fever, exophthalmos. Blood count, W. B. C., 15,000; polynuclears, 90%. Lumbar puncture—about three drams of slightly turbid fluid removed under some pressure. A smear showed numerous pus cells in large clumps. No organisms. A culture of the fluid was sterile in 48 hours. Temperature the following day 106.2°, pulse 120, respirations 24.

The parents realizing that the patient was dying, took her home. From what I learned from the family physician, the symptoms increased in severity. The exophthalmos and swelling of the right side of the face became greater and he thought that an abscess was present. The patient died eight days after operation, never having lost consciousness until the very end. No autopsy was allowed.

I have no doubt that this was a case of septicemia (probably streptococcemia) associated with a cavernous sinus thrombosis and possibly meningitis. No petechiæ were present on the skin. No blood culture was made. However, the symptoms were so indicative of a general infection that no one who saw the case had any doubt that there were signs of sepsis.

CASE II.—Elizabeth C., twenty years of age, came to the clinic about two weeks later with practically the same history. The history of this case was so like the other and the physical appearance of the girl was so similar that they struck me immediately.

The septum was deviated in its cartilaginous portion, to the right. Both middle turbinates were hypertrophied. The nares were perfectly clean.

The operation itself was a simple procedure, only the cartilaginous septum being removed. The procedure took a little longer than necessary owing to the fact that I was demonstrating the operative technic to post-graduate students. The patient, however, was not in the chair longer than a half hour. Keeping in mind the fact that too tight packing might cause trouble in such a case as this, only the smallest necessary amount was used.

Two days later the girl's mother returned to the clinic to tell me the patient was unable to leave her bed, that she had terrific headache and fever. I immediately went to see her, taking the necessary instruments and headlight. Nothing could be seen except an edematous condition of the mucous membrane of the septum and an unhealthy appearance of the wound. I cleaned the nares as well as possible, prescribed adrenalin and Dobell's solution and fairly large doses of morphine.

I need not enter upon a lengthy account of the next four days. The symptoms were practically the same as in Case I, except that there was no exophthalmos. I was in daily communication with the patient and expected symptoms of cavernous sinus thrombosis to occur at any moment. I finally decided that nothing could help her unless I found the focus of infection; for I had no doubt an abscess was present somewhere in the nose. On the sixth day I had Dr. Heiman administer chloroform and I carefully explored the nasal chambers. Adrenalin was first applied to the mucosa and then, after the engorgement had somewhat subsided, I opened up the submucous incision. The space between the mucous flaps was dilated with a Killian speculum. No pus was found. As I had about given up hope of finding anything, my elevator broke through into a pocket of pus well up above the middle turbinates. About one-half dram, I should judge, of thick ropy pus escaped. A counter incision was made in the mucosa on the left side and two cotton drains inserted on the right side, one in the septal wound and one on the floor of the nose. These were removed in twelve hours and the nose irrigated with peroxide of hydrogen.

As soon as the patient awoke from the anesthesia, she felt better. The temperature fell to normal and remained normal. An immediate recovery took place. A week later, an examination in my office showed a healed wound in the septum and a healthy condition of all the nasal mucous membranes.

I attribute the quick recovery in this second case to a number of factors. First, the supportive treatment employed in cases of sepsis was employed here. This consisted in giving the patient large quantities of water, food small in amount, at frequent intervals, mainly in the form of milk and buttermilk and lastly, large doses of morphine and codein, as much as a half grain of the former twice a day and a grain of the latter every two to three hours. Alcohol sponges were used to reduce the temperature. The patient could not take whiskey and no other stimulants than those enumerated above were given.

There are many points of similarity in these two cases. They were young girls of about the same age, and of the same build, both of Irish descent, both stenographers and both had felt too miserable to work for two years. Both were unusually bright and well educated. Both had a simple submucous resection performed. Both presented symptoms of septicemia. I have no doubt that the second case would have ended fatally if the pus focus had not been found. Moreover, I cannot help feeling that the first case might have recovered if a more thorough exploration under anesthesia had been made.

In reference to Case I, the question has come to my mind how an abscess occurring between the septal flaps could cause a cavernous sinus thrombosis. In studying the lymphatic and blood supply of the upper portion of the septum, I find that there are intercommunicating branches between the arteries and veins of the septum, and the arteries communicating with the cavernous sinus. The ophthalmic artery supplies the roof of the nose. Some of the veins accompany the ethmoidal arteries and terminate in the ophthalmic vein. A few veins communicate with the interior of the skull through the cribriform plate of the ethmoid and the foramen cecum. The opthalmic vein empties into the cavernous sinus through the sphenoidal fissure. Some of the lymphatics communicate with the subdural space. The venous return of the upper portion of the septum may be grouped into four sets: 1. An anterior set of veins which communicate with the anterior ethmoidal veins and a vein to the subdural space through the foramen cecum in the crista galli. 2. A middle set which communicates with the veins of the subdural space through the cribriform plate. 3. A posterior set which drains the posterosuperior portion of the septum and communicates with the posterior ethmoidal veins. 4. An indefinite plexus of veins which communicate with the sphenopalatine veins and the veins lower down on the septum which empty into veins on the floor of the nose.

11 WEST 91ST STREET.

BEFORE OPERATIONS.

Much harm is being done by starving patients and giving them heroic doses of cathartics before operation. An operation of sufficient importance to require any preparatory treatment is a trying ordeal for the patient, and should be prepared for as for any other trial of endurance.—EDMUND D. CLARK in the *Indianapolis Medical Journal.*

SPOON ENUCLEATION OF THE TONSIL.

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The value of any tonsillar operation consists in the thoroughness of the enucleation. No tonsil operation should be considered thorough, unless the capsule be included in the enucleation. The question of hemorrhage is usually what alarms most operators, but if the tonsil is removed with the capsule intact, it is my experience—regardless of the teaching of other operators—that bleeding instantly stops. That we occasionally have a stubborn hemorrhage of the oozing variety, is probably due to the fact that the tonsil capsule is composed of fibrous tissue. Fibrous tissue, as we well know, does not possess a great deal of contractility. Existing between the carotid side of the capsule and the superior constrictor muscle there is a varying amount of connective tissue, this possessing a greater amount of contractility than the capsule itself. Consequently, when a tonsil has been enucleated and part of the capsule remains we lose this contractile power, which is necessary for the closure of the bloodvessels and prevents hemorrhage when no injury has been inflicted upon either the anterior or the posterior pillars. When bleeding continues it is fair to assume that some portion of the tonsillar capsule remains, for these arteries pierce this capsule and ramify through the tonsil. Hemorrhage might also take place if in the enucleation some fibers of the superior constrictor muscle may have been brought away as well. This can be readily obviated by the use of the instrument which I have devised.

Secondary hemorrhage is practically unknown if the above details have been carried out. I believe if the anatomy were better understood we would not have any amputations or punching of this tonsillar tissue. At its best, part of the capsule still remains and the added danger of injury to the superior constrictor ensues. Using the various punches it is almost impossible to empty the supratonsillar fossa, where 90 per cent. of the abscesses occur. While it is generally conceded that a clean-cut surface will heal more quickly and is less liable to infection, it has not been my experience when using the tonsil spoon, to have had any infection nor to have the healing process delayed beyond a period of about ten days. I do not deem it necessary to massage this fossa during the period of healing, as suggested by Pynchon, because a certain amount of irritation is thereby caused, and exuberant granulations are liable to spring up, necessitating their removal. Careful cleansing with an alkaline wash, followed by a silver salt solution, constitutes the only treatment that is necessary after enucleation of the tonsil in the intact capsule. True it is there are some cases in which this fossa does not fill with connective tissue under four or five weeks, but these are the exceptions and not the rule.

The methods by which enucleation may be done

are numerous and vary with each operator, and he may have some special device of his own which seems to suit his method. The danger of using a knife in the separation of the pillars and the extirpation of a tonsil is such that only when we have an extremely tranquil patient and are exceedingly dexterous with the scalpel are we justified in using it. While the advocates of the knife use the blunt end to separate the tonsil from the connective tissue, using the sharp portion only to separate the pillars, by means of my spoon, the pillars are separated as well as the tonsil. This method can be used only by a very few.

The method of removing with the finger is undoubtedly the best, producing the least trauma, and least apt to cause injury to the surrounding parts, and undoubtedly it is as quick as any method. Ether is generally necessary for such cases, but there are some patients who object to a general

anesthetic for this purpose. While I have enucleated a number of tonsils under cocaine by my finger the patient usually gags and retches to such on extent that the time of removal is lengthened and the possibility of injury to surrounding parts is increased.

With the idea of overcoming this I have devised the spoon shown in the cut, by which the tonsil is removed with the capsule intact, with a minimum amount of loss of blood, and leaving a fossa which readily heals in a period of a week to ten days. A 10 per cent. cocaine solution with adrenalin, is injected at two points between the anterior pillars and the tonsillar capsule, and at two points between the posterior pillars and the tonsillar capsule, correspondingly with that made anteriorly. An ordinary hypodermatic, or, preferably, a Luer glass syringe is used, but a special gold needle four inches long is attached, which allows a deep penetration. A lapse of five minutes is allowed so that anesthesia becomes complete. The tonsil is then grasped, well into the supratonsillar and the intratonsillar fossæ so as to engage the capsule as well as the tonsil. Otherwise we might grasp the tonsillar tissue, which is soft and readily tears out. I believe this is the point wherein failures are often made in enucleation. A tongue depressor is not necessary, the handle of the volsellum taking its place. The spoon is then entered between the posterior pillars and the tonsillar capsule and made to rapidly separate from below upward to the supratonsillar fossa. The spoon is then moved rapidly forward, separating the tonsil as it comes forward from the connective tissue beneath. The same process is carried out inferiorly and anteriorly. This spoon has semi-sharp edges which act better as a separator on the connective tissue than a sharp instrument would do, without running the risk of leaving some of the capsule. The spoon fits so accurately over the tonsil that injury to the pillars need not be considered. The extreme traction by means of the volsellum brings the tonsils so well forward into the pharynx that it makes very little separation necessary. The many changes that were necessary to make this spoon of practical value are due to the efforts of F. A. Hardy & Co.

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APPENDICITIS.

When the patient is in a condition of profound sepsis and when the additional manipulation and duration of anesthesia would jeopardize life, the establishment of free drainage through a suprapubic opening with the slightest possible manipulation is the safer plan.—HOWARD R. CHISLETT in *The Clinic.*

TRACHEOTOMY FOR FOREIGN BODIES IN THE AIR PASSAGES; BASED UPON FIFTY-THREE SUCCESSFUL CASES.

W. F. WESTMORELAND, M.D.,
ATLANTA, GA.

The courtesy of many throat specialists in my section in referring their tracheotomy cases to me, has given me an extended experience in this work. This paper is limited to the discussion of tracheotomy for foreign bodies in the trachea or bronchi of children. My interest in this subject was stimulated by my study of a case that I was detailed to watch in my early medical days. In that case the usual routine of the time was carried out. The foreign body, a pawpaw seed, not being expelled at the time the trachea was opened, a tracheotomy tube was inserted a few minutes later. To prevent the child being choked by the mucus or seed in the absence of the surgeon, my duty was to keep the tube clear of mucus.

It took only a short time to convince me that the tube was disturbing both the patient and myself, was blocking the escape of both mucus and seed, and was a continual source of local irritation. Contrary to instructions, I removed the tube. In a short time the patient had coughed up a lot of mucus and the seed also.

I found the literature of this subject unsatisfactory, unscientific, and chaotic, practically ignoring all ideas of modern wound treatment; filled with directions that were ambiguous and absurd, a worthless heritage brought forward from period to period and preserved without rhyme or reason. Many surgeons, however, were making a stand for immediate operation; Goss voiced their sentiments; my father had for years taught the same.

Weist, in a study of a thousand cases, arrived at the following conclusions, which voiced the majority opinion: The presence of a foreign body in the air passages does not make bronchotomy necessary, nor should it be performed unless it causes dangerous symptoms, ignoring the fact that mortality increases with the passing moment.

How do these patients die? They choke to death or die of preventable infection. In Weist's table there were 937 cases with 232 deaths; 103 from asphyxia, 121 from infection, and 8 from hemorrhage. These are surgical cases and immediate surgical interference is indicated. The immediate danger is asphyxia; and prompt aseptic operation practically eliminates all danger of infection. Any appreciable mortality from hemorrhage is an

evidence of the operator's lack of skill. Irritation as a cause of subsequent infection will be considered later.

A word concerning the anatomy of this region, in which there are many anomalies, especially of the bloodvessels. An interesting and instructive article on these anomalies is that of Dr. Pilcher. The anatomy of this region is so loosely described in our anatomical and surgical text-books that those without practical experience or special study have no adequate knowledge or proper appreciation of the relative size of the organs involved, or the character and size of the space within the limits of which the operation is made; and I think it is due to this lack of knowledge that so many serious accidents, frequently in the hands of skilful men, have occurred. Their idea of the anatomy remains influenced by that studied in the adult cadaver.

Usually about five or six tracheal rings, rarely as many as eight, extend above the sternum. While the distance between the cricoid cartilage and the sternum varies greatly, the average full distance in a child one and one-half to two years old is: length 1¼ inches, diameter 1/6 inch; between three and five years, length 1½ inches, diameter ¼ inch; between six and eight years, length 2 inches, diameter ⅓ inch; between eight and ten years, length 2¼ inches, diameter ⅓ inch.

In 937 cases 712 were under ten and 474 under five years of age, so that practically three fourths of the operations will be upon a trachea considerably smaller in circumference than a lead pencil and within a length of about an inch, and this crossed by vessels and also the isthmus of the thyroid. A proper appreciation of this will prevent such accidents as cutting through the trachea, or missing it entirely.

A general anesthetic, the one the surgeon is accustomed to, should be used, carrying it only to the point of quieting; there is no pain in this region after the skin incision. No operation except that of opening the trachea in the upper portion should be considered for a moment; all others are impractical and dangerous.

Tracheotomy tubes have no place in this operation; they prevent the escape of mucus and foreign bodies and cause irritation. The trachea remains patent enough for all purposes without any assistance. I never use anything. If additional security is wished, a silk thread passed through each edge of the tracheal incision, looped and knotted, gives perfect control of the trachea.

In the young the thyroid isthmus is usually in the way; it should be held with the forceps, cut and ligated. I stitch in the ligature to prevent its slipping. In very young stout children the thymus gland may infringe on the working space, and when there is a deep receding trachea it may be very inconvenient. Depress it with a narrow retractor; do not use a tenaculum as any injury to it may produce troublesome hemorrhage.

After the fascia is cut, the longitudinal vessels can frequently be pressed aside; crossing, transverse, or anomalous vessels must be cut and ligated when in the way. The small veins may bleed profusely under the influence of venous congestion produced by difficult respiration, but they collapse and cease to bleed when air reaches the lung freely. I make it a rule to ligate all vessels, veins as well as arteries, as they are cut, and keep the incision dry and free from forceps. A dry wound is a great safeguard if, as occasionally occurs, great haste becomes necessary. The weight of the dragging forceps or any pressure on the trachea will sometimes stop the breathing; this should be remembered and guarded against.

Probably the greatest danger during the operation is asphyxia from fixation of the foreign body in the glottis. This complication probably rattles operators more frequently than any other that occurs in surgery and is the cause of most of the operative accidents. If the operator does not lose his head, he has two or three minutes in which to finish his operation and still resuscitate his patient.

I have had five experiences of this kind. My plan is to finish rapidly, holding the vessels with forceps, open the trachea and insert a female catheter, and by blowing into it distend the lungs; this as an aid to artificial respiration rapidly brings the patient around. The absurdity of such directions as inverting and shaking the patients, slapping them on the back and chest and thus losing valuable time is apparent.

The usual suggestions to grasp the trachea between thumb and fingers of the left hand to steady it and make it prominent is, I think, bad teaching. The compression necessary to accomplish this is apt to displace the skin; bulging it presses the vessels into the line of incision, and makes more difficult the already impaired breathing. A better plan is to place the pulp of the thumb on the skin just above the cricoid cartilage and make gentle traction upward; this steadies the skin for the downward stroke of the knife in making the incision.

A rather heavy scalpel, blade English shape, with razor edge, is the best knife to use. This character of knife does not require much pressure force in its use, and held as a violin bow is held, cutting with a

light, free-hand movement, rapid clean dissecting is accomplished without danger of the incisions being uneven in depth, and it exposes vessels without cutting through them. When the trachea is reached open by an incision beginning at the lower margin of the first ring.

The length of the incision should be determined by the size and character of the foreign body. If the opening is sufficiently large, the foreign body is easily expelled by respiratory effort; usually the opening is too small, and the trachea is injured by the forcible and difficult extraction of the body with forceps.

When the trachea is opened, anesthesia is suspended. In the majority of cases, the foreign body is blown into, or out of the opening within a few minutes after the trachea is opened. An accumulation of mucus is usually expelled at the same time. If the foreign body is not expelled at once, the patient is allowed to come from under the influence of the anesthetic, and the posterior wall of the trachea is tickled with a blunt probe in order to excite a paroxysm of coughing.

The foreign body is rarely impacted in any of the bronchi, but usually retained in a mass of viscid mucus, and is coughed up and expelled with the mucus. If it is not, the tracheal wound is left open until it is expelled. No further attempt is made to hasten its expulsion nor are any instruments introduced into the trachea for this purpose; an exception might be necessary in dealing with beans or like substances that would swell when influenced by moisture.

The use of probes or forceps or tracheotomy tubes, simply by their mechanical presence adds to the irritation and increase the danger of infection. I cannot too emphatically condemn the use of the tracheotomy tube in these cases. Why most surgeons continue to advocate their use I cannot understand. They prevent the escape of the foreign body which would otherwise occur, and by their filthy condition pave the way for a septic pneumonia. After opening the trachea, I divide these cases into three different classes. The management of each particular case will depend largely upon which of these classes it belongs to.

The first two classes are those in which the foreign body has been expelled at the time of the operation. The first class is of those cases in which the trachea can be closed at once. Is these cases there has not been sufficient irritation or infection to produce pathological changes in the mucous membrane of the air passages. In closing the wound I use a small, round, half-curved needle with a piercing, not cutting, point, and fine silk sutures. Fine silk is used for both sutures and ligatures. The tracheal incision is closed by interrupted mattress sutures, which are passed through the membrane enclosing the trachea itself. It should never include the mucous membrane. When the fascia is closely adherent to the trachea it is also included in the suture. This is the most important suture and should make the tracheal incision air-tight. After these sutures are placed, I fill the wound with saline solution and gently close the mouth and nostrils of the patient with my hand to see whether forced respiration will force air bubbles through the incision and overlying solution. If no bubbles are seen the incision is air-tight. If it is not, a few additional interrupted sutures will make it so. The fascia, muscles, and the isthmus of the thyroid gland are next sutured; then the skin incision is closed by a continuous suture. A surgical dressing is then applied and held in place by adhesive strips.

The second class is of those cases in which, though the foreign body is expelled promptly, the irritation, with subsequent infection and its accompanying accumulation of mucus, indicate drainage for a while. In these cases the whole incision is left patent for a while and the wound is dressed with a handful of loose bichloride of mercury gauze, held in position by adhesive strips. This dressing will prevent the direct introduction of cold dry air into the trachea, but will still admit the mucus that does not easily escape through the mouth being coughed through the opening into the dressing. The gauze should be changed frequently. Where the wound and trachea are protected in this way from the air, and the mucus promptly escapes, inflammatory symptoms quickly subside.

The third class of cases is of those in which the foreign body is not expelled at the time of the operation, in which infection and inflammatory changes have occurred. These cases are dressed in the same way as those of the second class, until the foreign body escapes and the inflammation subsides. The loose gauze dressing does not prevent the expulsion of the foreign body.

In both the second and third class of cases, when the foreign body escapes and the inflammatory symptoms subside, the patient is anesthetized and the wound closed and dressed as in the first class. Early in my experience with these cases I thought it necessary to exercise some control over the trachea; in other words, to keep it patent; and I used to use the looped and knotted sutures through the tracheal incision as already mentioned. But I

found them unnecessary and now I use nothing and let the trachea take care of itself.

The symptoms of foreign bodies may be divided for convenience into three stages: (1) obstructive symptoms immediately following the accident: (2) irritation produced by its presence; (3) inflammation at a later period. Of course, there are no distinct dividing lines between these stages. In the first stage the patient may die from asphyxia due to the size of the object, or a trivial object may be caught in the glottis and produce a fatal spasm. This spasm occurred in a patient of mine from a small piece of membrane from a raw peanut, during the operation, and he never breathed again until the trachea was opened and artificial respiration was performed.

If the object is irregular in shape or has sharp or rough edges, the stage of irritation rapidly supervenes, and by the mechanical injury to the delicate mucous membrane it opens a pathway for infection and inflammation, and the pneumococci, usually present in the upper air passages, find a ready soil for their propagation.

The successful issue in the 53 cases I have operated upon, though representing many varieties of foreign bodies and seen in the various stages of inflammation, has been due to prompt surgical principles without meddlesome interference. Each of these patients has been operated upon in the shortest time possible after seeing them; sometimes by candle light under exceptionally bad environment.

HEMATURIA IN RENAL CALCULUS.

Blood in the urine is a most important symptom. The blood may only be found during the attack of renal colic or it may be present in small quantity constantly. In this connection it must not be forgotten that blood corpuscles may be found in the urine during an attack of appendicitis. The mere presence of blood in the urine does not signify renal or ureteral calculi, since it may occur in tumors, in tuberculosis of the kidney or bladder and in the so-called essential hematuria of the kidney, as well as in certain forms of nephritis, especially those of an interstitial type. The older tests which attempted to differentiate between vesical and renal sources of the blood by the condition of the red corpuscles and by the fact that the blood appeared at a certain period of the act of urination can no longer be relied on. The use of the cystoscope is the most reliable mode of diagnosis and will soon tell us, in the majority of cases, whether the blood is of vesical or renal origin.—D. N. EISENDRATH in *The Southern Medical Journal.*

TREATMENT OF ECLAMPSIA.*

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The prophylactic treatment of eclampsia should be instituted as soon as any of the prodromic symptoms of auto-intoxication are present. In this connection I wish to digress from the subject of the paper to say that it is the duty of every physician to try to impress upon the minds of those applying to him for obstetric care, the necessity of promptly reporting any and all symptoms of ill health, and not to be satisfied with an occasional urinary examination for albumen only.

By this means, many cases of mild intoxication may be detected and, by suitable means, the more profound poisoning prevented.

As soon as symptoms denoting the existence of auto-intoxication, such as cephalgia, which is tenacious, and most marked in the morning; vomiting; insomnia; malaise; vertigo; epigastric pain, disturbance of vision, and edema of the anterior tibial region and of the hands and face, are present, absolute rest in bed, freedom from all mental care and worry and a liberal supply of oxygen are of utmost importance. The diet should consist essentially of milk, varied with buttermilk, malted milk, crackers and well cooked cereals. In the event of pernicious vomiting, rectal feeding should be instituted for a short time.

Hot colonic irrigations every six hours either with the Kemp or long rubber tube are of value; as is the augmentation of cutaneous elimination produced by warm baths and the maintenance of an even temperature.

Nitroglycerine is used to reduce arterial tension and to facilitate elimination; also tincture of strophanthus in event of cardiac weakness with rapid feeble pulse. Citrate of caffein is of value for the same purposes. An occasional dose of calomel followed by a saline or castor oil is indicated for hepatic congestion and to insure emptying of the intestinal tract.

When patients fail to show signs of improvement and the toxic symptoms become more pronounced under the foregoing treatment we are then left but one alternative, namely, the emptying of the uterus. This last statement is made with the knowledge that objections will be raised by some, on the ground that it conflicts with their religious belief

* Read before the Long Island Medical Society, January 5th, 1909.

and teaching. To those I would only say that their own consciences should be their guides.

We will now pass on to the consideration of antepartum eclamptic convulsions and to understand the treatment better, these cases are best divided into two classes.

First, those women who are large, plethoric, cyanotic and with high tension pulse; they require venesection or the hypodermatic administration of veratrum viride, either the fluid extract or Norwood's tincture in 20 minim doses repeated at short enough intervals to reduce the pulse to 60.

The second class includes the thin and anemic women with low tension pulse, for whom nitroglycerine and morphine hypodermatically are the drugs. The convulsions should be controlled by chloroform inhalation, and care taken that the tongue is not mutilated. For this purpose the method of Farnier is the best. It consists in taking a small towel or piece of cloth, stretching it between the hands and placing it against the extended tongue, pushing it backward into the mouth behind the dental arch. When the teeth close spasmodically they are prevented by the towel from coming into apposition.

The bowels should be unloaded by enema and one drop of ol. tiglii in a drachm of olive oil placed on the back of the tongue. No time should be lost in evacuation of the uterus in either class of cases, as by this means the convulsions in the majority of cases are terminated. The method to be pursued depends upon several factors—size of bony canal, condition of cervix, and viability or non-viability of the fetus, as well as upon the condition of the woman. When we are fortunate enough to find a canal of ample size and the cervix soft and dilatable, we then have only to decide whether it should be manual or bag dilatation and delivery of the fetus by version or forceps for the viable and the small non-viable. For the purpose of minimizing the amount of traumatism to the maternal soft parts, craniotomy is the best method of delivery of a large dead fetus.

Unfortunately, eclampsia occurs very frequently in the primipara with a small vagina, and a long, hard, rigid and undilatable cervix. It is in this class of cases that the obstetrician of to-day is especially interested, as the vaginal Cesarian section of Dührssen has proved itself a surgical procedure of merit. It has the advantage of being rapid and produces less shock and traumatism to the patient than by any other method of delivery that can be used in this class of cases.

Essentially a hospital operation, it should be undertaken only by one familiar with operative work; and requires the proper instrument and ample assistance. Under chloroform-oxygen anesthesia, with vulva and vagina prepared, a weighted speculum is introduced. After the anterior lip of the cervix is grasped by tenacula, one on either side and brought down the T-incision of Webster is then made in the anterior vaginal wall and the bladder is separated and pushed up, care being taken that it is separated well off on both sides. By the use of the Pryor towel retractor, the bladder is held well up out of harm's way. Traction sutures now replace the tenacula and serve the double purpose of tractors and anatomical guides for use after delivery when the sutures are being introduced. If the tenacula are allowed to remain on they are likely to be very much in the way during delivery, and if they are then removed hurriedly, there is no guide left for bringing together the opposite parts. With straight, heavy scissors the anterior uterine wall is then incised from the external os to a sufficient distance above the internal os to allow of ample space for rapid delivery. The height of the incision depends, of course, upon the size of the fetus; which estimate is made at the time. Valuable time is lost in trying to deliver through too small an incision.

It is well to introduce traction sutures at the level of the internal os at the time of cutting through that portion of the uterus, as they are of great service when, after delivery, it is necessary to introduce sutures into the uppermost angle of the incision, which is difficult without this help. Delivery is done by craniotomy and the basiotribe when the fetus is well developed and not living, or by version if it is viable. When the fetus is large and viable and the vagina small, delivery may be facilitated and laceration of the perineum prevented by right-sided or double episiotomy. Immediately after delivery of the placenta, the uterus is packed with gauze. The uterine muscularis is brought together with interrupted No. 2 chromic gut sutures at half inch intervals, care being taken that they go down to, but do not include the mucous membrane. Tight closure of the external os is not desirable as it may interfere with proper drainage.

The vaginal incision is then closed, leaving a small opening for drainage of the utero-vesical space; the drain in this location is to remain in for from 12 to 24 hours; the uterine gauze to be removed when the suturing is completed; and then the patient is returned to bed in the Fowler position.

The entire operation can be done in thirty min-

utes or less and the amount of blood loss is less than in an average normal labor. Oxygen is administered and the patient frequently returns to consciousness after coming out of the anesthetic. In considering the post-operative care of these patients I would first say that ergot is contraindicated.

It is necessary to bear in mind the two types previously mentioned, namely, the plethoric, cyanotic, high tension pulse patient and the anemic low tension case.

In the former, veratrum hypodermatically to keep the pulse down to sixty, the dosage required depending upon the individual case. It was a long time before I learned what constituted a sufficiently reduced pulse tension from the use of veratrum in eclampsia. A tension that is lowered enough in eclampsia would fill one with alarm in any other condition.

Thin, anemic, low tension pulse patients do well with nitroglycerine, citrate of caffein, intravenous saline infusion and hypodermatoclysis. Hot packs, dry cups, hot water bags, sinapisms, and hot poultices are useful in stimulating kidney and cutaneous elimination. Calomel gr. i on the tongue every hour for ten doses, and increasing quantities of water by mouth as nausea disappears, should be allowed. Chloral hydrate in drachm doses by rectum may be used to diminish spasm and control restlessness.

Oxygen started when the chloroform is given and continued after delivery is of great advantage. I am of the opinion that the beneficial effects of oxygen in eclampsia is often disregarded.

In closing I wish to report the following case:

Mrs. S., age 37, born in Ireland, primipara, admitted to the M. E. Hospital, 3:30 A. M., October 10, 1908. Family history negative. Had scarlet fever and diphtheria in childhood. Menstruated at 14; 28-day type, no pain. Married two years, one miscarriage at two months, one year before present illness. She became pregnant in May and had considerable vomiting, constipation and slight headache from early pregnancy.

On October 9th, after feeling very miserable all day she suddenly, in the evening, become unconscious and had one convulsion before the ambulance was sent for, which was followed by three more in an hour, comatose in the interval.

A specimen of urine, secured by catheter "boiled solid"; heart, negative; a few crepitant râles heard over the chest posteriorly. Tongue lacerated and bleeding. Edema pronounced over the entire body. Uterus about 10 c.m. above symphysis, well contracted and tense. Upon vaginal examination the cervix was found to be long, firm, rigid and undilatable.

I performed a vaginal Cesarean section under chloroform anesthesia and delivered a dead fetus by version.

There were no post-partum convulsions but complete consciousness was not restored for twenty-four hours.

The post-operative treatment consisted in nothing by mouth, but water and calomel, gr. i., dry on the tongue every hour for ten doses; external heat, hot packs, hot rectal irrigation, sinapisms and cups over the kidneys. Fluid extract veratrum, 10 minims every two hours, to keep pulse at 60. Oxygen given freely and chloral hydrate ʒss by rectum every three hours, when necessary for restlessness. The Fowler position was used and the vaginal drain removed at the end of twenty-four hours. Milk and lime water allowed on the second day and cereals on the third. Basham's mixture prescribed on the sixth day. The patient was out of bed in a chair on the seventeenth day. She was discharged five days later, at which time there was good union of the suture lines and the uterus was well contracted and anteflexed.

At a subsequent examination, six weeks after operation, a fine line of union of all incisions was found; the only irregularity being a small dimple in the anterior cervical lip. The patient had regained her usual health. The urine contained a very faint trace of albumen, 5.50 gr. of urea to the ounce, and no casts.

63 SEVENTH AVENUE.

A NEW METHOD OF APPLYING THE MURPHY BUTTON IN INTESTINAL ANASTOMOSIS.

The operation proceeds in the usual way except that no purse-string sutures are used. When the mesentery has been tied off and the cut ends of the intestine are ready for the reception of the divided button an assistant introduces one half into the lumen of the gut, holding it with an artery forceps, and with his free hand draws the intestine up on the button; a rubber band is then either passed over the artery forceps and snapped upon the button and intestine at about the point at which the purse-string suture is usually introduced, or the rubber band is cut and thrown around the button and intestine at the same point and tied snugly with a square knot. I make use of this little device because, before using it, I found that the introduction of the purse-string suture required some time, and not infrequently, when all was ready for the tightening of this suture, the silk would bind and refuse to pucker the intestine about the button and occasionally it would break and cause annoying delay while the suture was being replaced. I believe the use of the rubber band has another advantage in that the constant pressure which it makes certainly tends to free the button from the point of union when its work is done. The time saved is appreciable. —ALEXANDER NICOLL in the *New York Medical Journal.*

American Journal of Surgery

PUBLISHED BY THE

SURGERY PUBLISHING CO.

J. MacDONALD, Jr., M.D., President and Treasurer

92 William Street, N. Y., U. S. A.

to whom all communications intended for the Editor, original articles, books for review, exchanges, business letters and subscriptions should be addressed.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, NOVEMBER, 1909.

GASTRIC DIAGNOSIS AND THE TEST MEAL.

In recent years the test meal has been losing much of its importance in gastric diagnosis and especially has there been a growing distrust of its findings in the differentiation of cancer from other diseases of the stomach. One need seek no better expression of the real value of the test meal and no more authoritative warning of its unreliability as a diagnostic measure when taken alone than the article by Christopher Graham and Donald Guthrie, in the *N. Y. Medical Journal,* September 4, 1909. Uttered from St. Mary's Hospital, Rochester, Minn., where so much material is furnished for test meal observations and where so many of the cases were immediately followed by operation, the statements of these observers leave no room for doubt.

In their report Graham and Guthrie summarize the gastric findings in 250 cases of ulcer of the stomach and duodenum and 150 cases of carcinoma, which have all come to operation and the correctness of the diagnosis established; 100 cases of pyloric spasm due to appendicitis or gall-bladder disease; 100 cases of stomach neurosis; and 25 cases of pernicious anemia.

These summaries present a striking contrast to the stereotyped text-book teachings. Three-fourths of the patients operated upon for gastric ulcer did not show high gastric acidity. Especially was this true of older patients with chronic ulcer. Young subjects with developing ulcers showed high acid percentages. Of the 150 cases of gastric cancer free hydrochloric acid was absent in only 80, lactic acid was present in but 64, and food remnants in 63. To turn from figures to comments, it is seen that while free hydrochloric acid is rarely present with advanced gastric carcinoma, in the earlier cases the test meal may avail us little or nothing. Decided food remnants are of greater significance as a surgical indication than the acid percentages. On the other hand, there are a few cases in which the subjective symptoms are indefinite, and where the test meal throws the first light upon the real pathological condition present." And so gastric analysis, like so many other of our chemical tests must not be relied upon to the exclusion of clinical factors, but is to be accepted only in connection with careful anamnesis and physical examination.

Especially is it important to remember that in early cancer of the stomach, the test-meal findings, like the other classical signs, may fail to definitely corroborate a nevertheless reasonable suspicion; and that operation should not be postponed until that suspicion can be replaced by certainty. When the diagnosis is beyond doubt the patient is beyond cure.—W. M. B.

JOINT TUBERCULOSIS.

In a highly suggestive paper, Leonard Ely (*Medical Record,* October 2, 1909), reports observations based on a clinical and pathological study of 45 specimens of resected joints. In the first place, it is interesting to note that of the ten cases in which no tuberculosis was present, nine were clinically diagnosticated as such, in an appreciable number, by men of much ability. On the other hand, four joints proved to be tuberculous on pathological examination, although the clinical diagnosis was otherwise. These two observations arouse justifiable skepticism in Ely's mind concerning reported statistics of tuberculous joints cured by conservative measures, and also lead him to be far more guarded and painstaking in the diagnosis of joint tuberculosis than he was before.

Another interesting observation derived from this study is the comparatively large proportion of primary synovial tuberculosis (four out of fifteen cases in which the origin of the process could be traced), particularly in the light of Nichols' work in 1898, which had led American orthopedic surgeons to regard all cases of joint tuberculosis as of bony origin.

The microscopical study affords a most striking revelation of the efforts of nature to heal the diseased process by depriving the joint of motion; in other words, by converting the joint into a synos-

tosis. This observation has deepened Ely's conviction that the best way to cure a tuberculous joint is by immobilization. He, therefore, does not approve of the efforts of many surgeons to preserve motion in the treatment of tuberculous joints. In accordance with this view, he believes that the method of treating tuberculosis of the hip or knee by the plaster of Paris bandage is better than the older method with stilting and traction splints. On the other hand, he holds that the advice of many surgeons to "go wide of the disease" in the performance of joint resections, should not be heeded too zealously. Such foci as may be left behind, heal spontaneously in the majority of instances, if the joint is firmly immobilized.

Ely's studies, especially from a clinical aspect, also tend to disturb the widespread notion that patients afflicted with a tuberculosis joint are short lived. On the contrary, the cases that have been followed show a low percentage of mortality, as shown by the fact that only two of the adult patients have died. Finally, Ely expresses himself emphatically concerning the utter inutility of the operation of curettage as usually practiced.

This study affords a striking illustration of the value of testing one's knowledge of clinical phenomena by the touchstone of morbid pathology. Inasmuch as this is merely a preliminary report, we await amplification of its writer's deductions with considerable interest. E. M.

ANNOUNCEMENT!—

THE PHILADELPHIA NUMBER OF THE AMERICAN JOURNAL OF SURGERY.

The cordial reception accorded to the Greater New York Number published last March has encouraged us to prepare similar special issues. The December number of the AMERICAN JOURNAL OF SURGERY will be an extra large Philadelphia issue, devoted to contributions from leading surgeons of that city. Among these will be: "A Consideration of the Diagnosis and Treatment of Retro-Displacement of the Uterus," by E. E. Montgomery; "Tumors of the Urethra in Women," by Barton Cooke Hirst; "Roentgen Treatment of Malignant Diseases," by Charles Lester Leonard; "The Control of Hemorrhage During Pregnancy," by Edward P. Davis; "The Diagnosis and Treatment of Ectopic Pregnancy," by F. Brooke Bland; "The Conservation of the Middle Turbinated Body," by William A. Hitschler; "Cyclodialysis," by Walter L. Pyle; "Polypoid Growth of the Rectum and Report of a Recent Case," by Lewis Adler, and papers by Ernest LaPlace, William Campbell Posey, H. M. Christian and John A. McGlinn.

Surgical Suggestions.

Aspirin can replace morphine for many of the post-operative pains, particularly at night.

A psoas abscess may point over the anterior spines of the ilium, simulating osteomyelitis of that bone.

Before operating on a case of prepatellar or olecranon bursitis, symmetrically placed and indolent in course, give the patient thorough antisyphilitic treatment.

The "lymphangeoplastic" operation of Simpson Handley is simple and may prove a great boon to patients suffering from otherwise incurable edemas of the extremities (elephantiasis, compression of the axillary vein by cancer of the axillary nodes, obliterating thrombosis of the iliac vein, etc.).

Abdominal pains associated with a small mass in the umbilical region, or at the brim of the pelvis, should arouse the suspicion of a possible "fused," "horseshoe" or "pelvic" kidney.

The examination of the urine secured from each side by ureter catheterization is the most satisfactory means of determining the condition and functional activity of each kidney. Cryoscopy never earned general acceptation, and the phloridzin and indigo-carmine tests have not an absolute value.

A sufficient number of cases have been reported to demonstrate that appendicitis may simulate the signs and symptoms of renal or ureteral calculus—including hematuria and a skiagraph shadow in the path of the ureter.

One of the simple and best differential signs between renal and vesical hematuria is obtained by standing the urine in a conical glass for twenty-four hours. In hematuria of vesical origin, all the blood has settled to the bottom by this time; in renal hematuria, the whole fluid still remains smoky.

The operation that most surely provides a cure for pararectal fistula is complete extirpation of the tract. This can be done in a great many cases. The radical removal of all portions of the tract may be assured if it is first injected with colored paraffine. The operation is less mutilating than incision through all the tissues, and healing is not only quicker but more certain.

Book Reviews.

Diseases of the Bones and Joints. Clinical Studies. By JOEL E. GOLDTHWAIT, M.D., CHARLES F. PAINTER, M.D., ROBERT B. OSGOOD, M.D. Octavo; 685 pages; 287 illustrations. Boston: D. C. HEATH AND CO., 1909. Cloth, $6.

On the borderline of medicine and surgery there is no more interesting and perplexing set of conditions than those peculiar chronic joint affections—variously called rheumatoid arthritis, arthritis deformans, metabolic osteoarthritis, and the like—whose manifestations are as distressing as their etiology is obscure. The authors of this book, who have given much study to these joint affections, throw no new light on this obscurity—they make no pretense to do so; but they attempt to do what is next most important, viz., to clarify our clinical conceptions of chronic joint diseases, and by correlating symptomatic groups with pathological findings, to help to prepare the way to an understanding of causes and the establishment of rational treatment.

The work is divided into three sections. Section I is devoted to *Tuberculosis of the Bones and Joints.* It includes a very good chapter on *methods of physical examination.* This section does not follow the stereotyped lines of the text-book, but it presents a most interesting study of the manifestations of tuberculosis in the bones and, more especially, in the joints; and a modern statement of its treatment, both locally and by such other measures as we have learned to adopt with our broadening conceptions of the management of tuberculosis in general.

Section II, *Non-Tuberculous Diseases of the Joints,* is the most interesting, because the most novel. Those who are familiar with recent contributions by these authors to the *Boston Medical and Surgical Journal* will recognize the classification they adopt here of the non-tuberculous arthritides:—(1) Infectious Arthritis, (2) Atrophic Type, (3) Hypertrophic Type under infectious arthritides are included articular rheumatism and all other (non-tuberculous) arthritides due to infecting organisms (or their toxines).

As the atrophic type of non-infectious arthritis the authors describe a fairly definite clinical entity, not without, however, borderline approaches to other forms of chronic arthritis. So-called rheumatoid arthritis, and Still's disease belong to this group, the essential features of which are at once recognized by the excellent photographs and skiagraphs. The page and a half on etiology demonstrates our ignorance of the cause, and goes no further, indeed, than the argument that it is probably not microbic. Most interesting, however, is the discussion of the pathology, based on personal studies of these joints at various stages. The authors point out that "there has been too great a tendency to regard the terminal lesions, which . . . represent in point of fact a stage of repair, as characteristic of the fully developed disease." The changes involve all the bone structures; and the earliest lesions are in the synovial membrane and take the form of a villous arthritis. "The normal tissue elements of this structure undergo hypertrophy and round-celled infiltration becomes pronounced, particularly in the tips of the villi." The subsequent changes, gross and microscopic, in the synovia, the cartilages, and the bone (in which the lesions appear last) are described and illustrated.

Under the term hypertrophic arthritis are described as one "chronic constitutional disease with local joint manifestations" a group of joint affections that have generally been regarded as separate entities. The affections called Heberden's nodes, morbus, coxæ senilis, spondylose rhizomelic and osteoarthritis, respectively, are but manifestations of this constitutional disease. Unlike the atrophic type, the hypertrophic is not always polyarticular, nor has it quite the same joint distribution. Unlike the atrophic type, too, trauma and exposure play an important etiologic rôle. The pathological changes are quite different also, and these the writers describe from studies of early cases made from tissues removed by arthrotomies. The important change is in cartilaginous hypertrophy. While there may be localized villous hypertrophy in spots associated with these cartilaginous changes, the general cavity of the joint is usually fairly normal. In some cases the subsynovial fat is in excess, diffusely or localized. The hypertrophy of the cartilage is irregular, particularly along the trochlear surfaces; and it produces a fairly characteristic "lipping."

The clinical courses of the atrophic and the hypertrophic types are described, and illustrative case histories are furnished. Cure is difficult in both forms, but much can be accomplished by intelligent treatment, as outlined.

While their pathological studies, have been, of necessity, limited, the authors are satisfied by those studies and by their clinical observations that "hypertrophic arthritis" and "atrophic arthritis" are not related, as many believe, and that though the terminal lesions of these two types and of the infectious type have some resemblances, they are separable pathologically and clinically and they may be differentiated by careful anamnesis and examination. Perhaps it is too bold to regard as one disease,—hypertrophic arthritis (osteoarthritis),—so many joint affections known to us by other names; and to so sharply separate from it the disease or diseases of the atrophic type (rheumatoid arthritis). But, at least, this description affords useful clinical and anatomical conceptions, and they may prove adaptable, without great violence, to later acquisitions to our knowledge.

Also in Section II of this book are chapters devoted, respectively, to *Lipomata* (of joints), *Neoplasms, Hysteric* and *Functional Joints,* (we presume the authors mean "functional joint disorders." "Functional joints" is inexcusable medical slang), and *The Operative Technic and Mechanical Treatment of Chronic Non-Tuberculous Joint Disease.*

Section III has no title. It deals with miscellaneous subjects: *Lues, Osteomyelitis, Rachitis, Osteogenesis Imperfecta, Chondrodystrophia Fetalis, Ostitis Deformans, Villous Arthritis, Gout, Hemophiliac Joints, Intermittent Hydrops, Subdeltoid Bursitis, Round or Stoop Shoulder,* etc. Some of these chapters, *e. g.,* that on hemophiliac joints, are too brief. That on subdeltoid bursitis condenses much that had previously been written by Goldthwait.

It is difficult to understand why the authors included lipomata, neoplasms and hysterical joints in the section on Non-Tuberculous Diseases of the Joints, and yet put villous arthritis, gout, lues of the joints and intermittent hydrops in the nondescript section of miscellaneous disorders.

The consideration of diseases of the bones is very fragmentary, indeed, and the title of the book is therefore misleading. Even the joint diseases are not all included, nor was it intended that they should be. The sub-title, "Clinical Studies," expresses the general character of this excellent work, and affords some notion of its scope. If these "studies" accomplish nothing more than encourage close clinical observations of cases of chronic joint disease, and to stimulate a more general effort to afford relief to the unfortunates whom those curious diseases afflict, their publication in book form will have served a very useful purpose!

The Collected Papers of Joseph, Baron Lister, Member of the Order of Merit, Fellow and sometime President of the Royal Society, Knight Grand Cross of the Danish Order of the Danebrog, Knight of the Prussian Order pour le Merité, Associé Etranger de Institut de France, etc. *In two quarto volumes.* Vol. I., 410 pages; Vol. II., 552 pages. Illustrated. Oxford: AT THE CLARENDON PRESS. 1909.

On April 5, 1907, Lord Lister reached the age of eighty years, and the anniversary was recognized by greetings from medical and scientific bodies all over the world. As this date approached the desirability of some permanent record of so important an event was generally felt. In many foreign universities, especially in Germany, such a memorial would have taken the form of a "festschrift"—a volume containing contributions to medicine written for the occasion by friends and pupils of him who was to be honored. In this country such festschrifts have been pub-

lished in honor of Wm. H. Welch, of A. Jacobi, and (in serial form in *Surgery, Gynecology and Obstetrics*), of the elder Senn. In Great Britain, however, tributes to medical men have never, we believe, been expressed in this delightful form. Those who undertook the preparation of a Lister commemorative publication hit upon another and, it seems to us, even happier idea. Their plan (as announced editorially in the AMERICAN JOURNAL OF SURGERY, May, 1907), was the preservation in book form of all Lord Lister's publications and addresses. The execution of this plan was undertaken by a committee composed of Sir Hector Cameron, Sir W. Watson Cheyne, Mr. Rickman J. Godlee, Dr. C. J. Martin, and Dr. Dawson Williams, with the cooperation of Lister himself. The result of their labor is before us in two beautifully printed and handsomely illustrated quarto volumes—a credit to the book work of the Oxford University Press and an artistic tribute to the venerable father of modern surgery!

These two volumes contain practically all of Lister's articles and essays down to the present time and all of his addresses that possessed more than merely local interest. The articles are divided into four parts, according to the general heading under which they could be grouped. Part I, *Physiology*, and Part II, *Pathology and Bacteriology*, constitute volume one. Volume two contains Part III, *The Antiseptic System*, Part IV, *Surgery*, and Part V, *Addresses*. In each part the chronological order of the several papers has been followed. An early and a current portrait of Lord Lister are frontispieces of the respective volumes.

It is unnecessary to review the contents of these two handsome volumes—they are already a part of the history of medicine, and those who are unfamiliar with them are nevertheless employing or enjoying the fruits of the labors that these essays represent.

One naturally turns first to that monumental essay (volume two) *On a New Method of Treating Compound Fracture, Abscess, etc., with Observations on the Conditions of Suppuration*, published in the *Lancet* in 1867, and reads and re-reads with increasing admiration of the man, that epoch-making paper, so rich in brilliant clinical observation and comparison, curiously mixed with scarcely less brilliant misconceptions; so expressive of the pitiful burden of the surgery that was, and—conceived of a master mind working along the path of a correct principle—so gloriously pregnant with the beneficent surgery that was to be! One reads the other essays relating to the antiseptic system with still increasing admiration of the scientific observations by which their author modified, corrected, developed the principles and the practice of this, one of the two greatest contributions to surgery.

On the introduction of antisepsis (and asepsis is but its natural outgrowth) Lister's fame will rest, but let those who know no other of his claims to prominence among great surgeons, turn to his essays in part 1, physiology, part 2, pathology and bacteriology, or part 4, surgery, or even read the interesting *Introduction* in volume one, that they may appreciate the scientific precision of his physiological experiments and histological studies, his even more important additions to the earlier bacteriological methods, and his originality and experience as an operator.

It takes nothing from Lister's greatness to admit that Pasteur was greater, and that Pasteur's discoveries are the secure foundation on which antisepsis and asepsis, are built! Lister had been patiently studying the problems of inflammation, "putrefaction" and wound repair. He had opposed the general belief that suppuration was an essential part of the process of healing and had expressed the opinion that this process should be, as in such subcutaneous injuries as fractures, without suppuration and constitutional reaction. He believed these resulted in some way from the putrefaction of blood and wound secretions. He had even instituted in his wards the washing of the hands before dressings. He was speculating on these matters when Pasteur's papers were published. They furnished the explanation for which he had been seeking, and which he, before all others—and for some time in spite of many others—was prepared to receive and apply! Lister is truly the father of modern surgery and its benefits to the people of the earth are his eternal monument!

Surgical Diagnosis. By EDWARD MARTIN, M.D., Professor of Clinical Surgery in the University of Pennsylvania. Large octavo; 772 pages; 445 engravings and 18 plates in colors and monochrome. Philadelphia and New York: LEA & FEBIGER, 1909.

The book is written "in the interest of early diagnosis in its relation to helpful and curative surgery." Stress is therefore laid upon symptoms of major or deciding moment, or when such are absent, upon operative or laboratory means of diagnosis. This is the keynote of the book and this object has been kept in view throughout, at times to the distinct detriment of its instructive value.

The introductory chapter on *Laboratory Diagnosis* by LONGCOPE, is conservative and clear, and does not attempt to teach laboratory methods (and therefore fail to do so!) in 20 pages. PANCOAST'S chapter on *x-ray diagnosis* is now a necessary adjunct to books on surgical diagnosis. The numerous outline drawings of fractures, with short captions below each picture, scattered throughout the volume, add greatly to its teaching value and permit of the presentation of very numerous cases within a short compass. ANSPACH'S chapter on gynecological diagnosis is as complete as anything of this nature, compressed within 46 pages, can be. WEISENBURG, who has been given 83 pages to outline diseases of the nervous system, has written a chapter well up to date and sufficiently complete.

The rest of the volume is from the pen of Martin himself, dealing first with general surgical diagnosis—inflammations, trauma, tumors, skin, bloodvessels, lymphatics, muscles, tendons, and bursae, and bones and joints; secondly, with regional diagnosis.

The classification throughout is systematic, the treatment clear and concise, and practically no omission of known diseases can be found. Necessarily extreme brevity predominates—tumors of the breast occupying but one and one-half pages; the symptomatology of an important disease such as erysipelas being compressed into one sentence, "It is usually superficial in type and accompanied by great swelling, redness, slight vesication, glandular involvement and marked constitutional symptoms of sepsis."

Unfortunately, the demands of a large class of medical readers force authors to write books "completely covering an entire subject," and while authors and publishers must strive to satisfy such impossible requests within the covers of a single volume, the text is reduced to a concentrated product which requires liberal dilution to become palatable. Therefore, although this book is excellent of its kind, complete, conservative, well balanced between laboratory aids and bedside observation, profusely illustrated and of good typography, all has been sacrificed for the sake of completeness and the resultant is a mere epitome at the cost of all perspective and the omission of all differential reasoning.

Immunity and Specific Therapy. By W. D'ESTE EMERY, M.D., B.Sc., Lond. Clinical Pathologist to King's College Hospital and Pathologist to the Children's Hospital, Paddington Green, etc. Octavo; 448 pages; illustrated. New York: PAUL B. HOEBER, 1909. $3.50, net.

The author's aim has been to review the extensive work on immunity in a manner to be readily grasped by those not engaged in special research on this subject. It is a pleasure to record that this work has been done exceeding well. After a thorough perusal of this book one is left with the impression that the author is master of his subject, from the standpoint both of knowledge of the literature and of practical laboratory experience. His pedagogic capacities are revealed in a logical and lucid exposition of the subject, a style distinguished by simplicity and directness of expression, and a judicial temperament that steers him clear of advocating the views of any particular school of thought.

The titles of the chapters indicate the scope of the work: Introductory and general, the Nature of Toxins, the Phenomena of Antitoxin Formation, the Interreactions of Toxin and Antitoxin, the Origin of Antitoxin—the side-chain theory, Immunity to Toxins, Bacteriolysis and Allied Phenomena, Agglutinins, Precipitins, Phagocytosis, "Re-

actions" and Similar Phenomena, Colloidal Theory of Antibodies, Immunity to Bacteria, and Practical Applications. An excellent working bibliography is appended and the introduction of a glossary fills a much felt want.

The book is most opportune and can be cordially recommended to those who desire to know the present status of this complex subject.

Medical Sociology. A Series of Observations Touching Upon the Sociology of Health and the Relations of Medicine to Society. By JAMES PETER WARBASSE, M.D., Surgeon to the German Hospital; Attending Surgeon to the Seney M. E. Hospital, Brooklyn, N. Y.; Member, American Medical Association, American Association for the Advancement of Science, American Society of Sanitary and Moral Prophylaxis, Ethical Social League, etc. Duodecimo; 355 pages. New York and London: D. APPLETON & COMPANY, 1909. Price, $2.00.

This small book is a collection of short essays on medico-sociologic subjects, charmingly written. Several of these essays appeared as editorials in the *New York State Journal of Medicine*, when the author was its editor; others appear now for the first time.

For the layman and the doctor alike, there is a rich fund of knowledge of practical and of great sociological value in this book. The homely style, by which point after point is driven home by simple analogy, by plain yet forceful metaphor will appeal to all classes of people. The ground work of this volume is common sense and frankness. On this are broadly built the principles that should guide us in health and in the treatment of disease from the layman's and from the physician's viewpoint. Warbasse fearlessly enters such problems as the instruction of the young in sexual hygiene, the relation of the state to medicine, ignorance and disease, etc., fearlessly because there is something of vital importance to be taught. Other writers have said these things before, but Warbasse's vigorous, convincing, yet simple style makes his book far-reaching—to parents, to the youth, to layman, to physician. The book should be in the library of anyone interested in the live problems of health and of disease of to-day.

A Text-Book of the Diseases of the Ear. For Students and Practitioners. By PROFESSOR DR. ADAM POLITZER, Imperial-Royal Professor of Aural Therapeutics in the University of Vienna; Chief of the Imperial-Royal University Clinic for Diseases of the Ear in the General Hospital, Vienna, etc. Translated at the Personal Request of the Author and Edited by MILTON J. BALLIN, Ph.B., M.D., Assistant Surgeon, New York Ophthalmic and Aural Institute; Assistant Surgeon, Mount Sinai Dispensary, Ear, Nose and Throat Department; and CLARENCE L. HELLER, M.D. *Fifth Edition*, Revised and Enlarged. Octavo; 892 pages; 337 original illustrations. Philadelphia and New York: LEA AND FEBIGER, 1909.

This latest edition of Prof. Adam Politzer's book on the Ear has been carefully revised and edited by the translators to keep it abreast of the latest that is known in otology. The great advances that have been made in the past few years particularly in the pathology of diseases of the internal ear, and the greater boldness with which operators enter the labyrinth have materially enlarged the field of otology and thus made it necessary in this treatise to insert a number of pages on the pathology and symptoms of labyrinthine conditions.

The careful investigations undertaken at the author's clinic in reference to the functions of the labyrinth in the normal and diseased state, and, in particular, the association of labyrinthine conditions with nystagmus and disturbances in equilibrium, have furnished data of importance, not only to the aurist, but also to the neurologist. These various tests are described in great detail and are an example of the painstaking researches for which the German clinics are so well known. We are sorry to see that no mention is made of Dr. Richard's work on the labyrinth which Dr. Politzer has praised in papers within the year.

It has been the general consensus of opinion that this is the greatest book that has ever been written about the ear. Professor Adam Politzer is the recognized authority on the ear and perhaps has the greatest reputation of any man living in this specialty. This translation contains for the most part, Politzer's own experience, his own opinions and his own methods.

The translators are to be praised for the clearness of their diction and the ability with which they so correctly construed many almost difficult passages from the German. Their hearty co-operation with Dr. Politzer himself has made the translation as accurate as the original.

It is almost impossible for the reviewer to describe the wealth of material that is contained in a book of this kind. Such a volume must be constantly referred to for a considerable length of time and must be read carefully again and again before even the smallest portion of it is mastered. We venture to say that not even the most insignificant item referring to the ear has been omitted. There are even chapters on artificial ear-drums and megaphones and the adaptability of these to individual needs.

We would suggest that later editions be brought out in two volumes so that the spacing may be made greater and larger type used. The illustrations are fair. Their distinctness is somewhat marred by being printed on thin glossy paper.

Tuberculosis of the Nose and Throat. By LORENZO B. LOCKARD, M.D., Laryngologist and Rhinologist to the Jewish Consumptives' Relief Society Sanatorium, the Y. M. C. A. Health Farm and the Evangelical Lutheran Sanatorium; formerly Laryngologist to the National Jewish Hospital for Consumptives and Member of the Board of Directors of the Agnes Memorial Sanatorium; One Time Professor of Anatomy, Toledo Medical College, etc. Octavo; 368 pages; 85 illustrations, 64 of them in colors. St. Louis: C. V. MOSBY MEDICAL BOOK AND PUBLISHING CO., 1909.

The main objects of this book are to place before the profession the modern views concerning the early recognition, the treatment and prognosis of the disease, in the hope that it will engender an increased faith in the efficacy of treatment and a full appreciation of the importance of early diagnosis and treatment and of the routine examination of the larynx in every consumptive. Statistics show that in one-third of all patients suffering from tuberculosis of the lungs, there is a complicating lesion in the throat. Autopsy examinations reveal the presence of tubercular lesions in the larynx in fifty per cent. of lung cases. In many of these cases the development of a focus in the larynx or pharynx increases the constitutional symptoms, often producing intolerable pain and sometimes proving the direct cause of death.

The author places before us a perfect treatise on a subject of inestimable value. The work is complete in every detail. The first chapter deals with the history of laryngeal tuberculosis; the next three take up the etiology; six more chapters cover the field of pathology and symptoms; four chapters are devoted to treatment; and lastly, three chapters are devoted to tuberculosis of the nose, nasopharynx and pharynx.

By far the most important part of this treatise is that dealing with treatment. The author disapproves of the use of tuberculin in laryngeal tuberculosis. "In not a single instance was there any notable improvement, at least in excess of that which usually occurs in patients who are placed under the best of hygienic conditions, but without treatment other than enforced vocal rest, cleansing sprays, etc." He considers lactic acid and formalin the best medicaments for topical application. "Formalin can be used daily in a strength of from 3 to 5 per cent., thus maintaining a continuous influence, an effect impossible of attainment with lactic acid, and to this continued action, can be credited much of its remarkable power." The *x*-ray application is uniformly disappointing. After a careful perusal of the pages on treatment particularly, one is struck with the enormous experience in therapy the author has had.

The book abounds with practical knowledge of all the phases of tuberculosis of the nose and throat. It is probably the most extensive and comprehensive book of its kind on this subject and presents a wider and more encouraging knowledge of a field which too often is treated negligently, both by the internist and the specialist.

The colored illustrations, which are numerous, are beautifully drawn and in themselves form a valuable atlas of all the various stages of tuberculosis of the upper air passages.

A Text-Book of Surgery. For Students and Practitioners. By GEORGE EMERSON BREWER, A.M., M.D., Professor of Clinical Surgery at the College of Physicians and Surgeons, Columbia University, New York; Surgeon to the Roosevelt Hospital, etc., etc. *Second Edition.* Octavo; 915 pages; 415 engravings and 14 plates. New York and Philadelphia: LEA AND FEBIGER, 1909.

This, the second edition of Brewer's work, as compared with the first edition (1903), shows a marked improvement. We know of no text-book of surgery that needed it more!

The author has evidently appreciated (and in his preface, he practically confesses) that in his earlier effort at condensation he overshot the mark, and produced a book altogether too fragmentary to be of any real service. A perusal of his second edition shows that his work has, indeed been "thoroughly revised and much enlarged." In actual bulk the enlargement has been by almost one-third; while the text itself has been largely rewritten and somewhat rearranged. Of the new illustrations, of which there are over 100, the most striking are the colored plates made from photographs taken by the Lumière process.

While in its present form, this work more nearly approaches the needs of the student, it is still scarcely adequate as a text-book of surgery.

Manual of the Diseases of the Eye for Students and General Practitioners. By CHARLES H. MAY, M.D., Attending Ophthalmic Surgeon to the Mount Sinai Hospital, New York; Instructor in Ophthalmology, Columbia University (Coll. P. and S.), 1890-1903, etc., etc. *Sixth edition.* Duodecimo; 391 pages; 362 illustrations, including 62 colored figures. New York: WILLIAM WOOD AND CO., 1909. $2.00, net.

This small manual has been one of the most successful medical text-books ever published. It has been adopted by students in many colleges and is widely known to practitioners all over the world by reason of its German, Italian, French, British, Dutch, Spanish and Japanese editions.

This, the sixth American edition, needs no extended review nor fresh commendation. While the work has not been enlarged, nor considerably altered, it has been carefully revised and new paragraphs have been introduced. Deaeling with the conjunctival tuberculin test, trans-illumination, cerebral decompression, etc.

Text-Book of Anatomy and Physiology for Nurses. Compiled by DIANA CLIFFORD KIMBER, Graduate of Bellevue Training School; formerly Assistant Superintendent, N. Y. City Training School for Nurses and Illinois Training School. *Third Edition.* Revised by CAROLYN E. GRAY, R. N., Assistant Superintendent, New York City Training School for Nurses. Octavo; 421 pages; 212 illustrations. New York: THE MACMILLAN CO., 1909. Price, $2.50.

The third edition of this excellent book for nurses has in many parts been added to and brought up to date. This is especially noticeable in the illustrations which are for the most part, copies from the standard text-books of anatomy and physiology. They make the text clear and do not confuse.

The introductory chapter which has been added to the former edition deals with the basic principles of chemistry in lucid, easily understood style. The chapter on the nervous system has been completely rewritten and is put before the student in an interesting way. We think, however, that it is much too technical and detailed for the average busy student-nurse. The summaries that have been appended to each chapter are perhaps the best addition that has been made in this new edition. They are simple, readily understood and remembered, and must serve to clear the somewhat confused ideas that beginners would have after reading chapters on a subject which, no matter how well put, is intricate and involved.

Neurasthenia. By GILBERT BALLET, Professeur agrégé à la Faculté de Médecine de Paris, Médecin de l'Hôtel Dieu, Président de la Société de Neurologie. Translated from the third French edition by P. CAMPBELL SMITH, M.D. Octavo; 408 pages; 7 figures. New York: PAUL B. HOEBER, 1909. Price, $2.00, net.

This work (of which the two earlier French editions were conjointly by Ballet and Proust) is an excellent general treatise upon the subject. The translator has given a good English text and added a valuable introductory chapter. The author's preface at once suggests decided ideas of treatment—psychotherapeutics, in its widest application and condemnatory words for drugging.

Throughout the book, the author rigorously adheres to his text, and this together with a regard for the wearisome effect upon the reader of unnecessary speculative discussion, affords a happy contrast to some other works upon the subject.

The translator's differentiation between what he terms neurasthenia minor and neurasthenia major, does not appear warranted. The distinction, as based upon pathogenesis, is not clear.

While admitting the possibility of a development, de novo, Ballet is a strong adherent to the doctrine of hereditary soil. He would make neurasthenia a "degeneration neurosis," but wisely qualifies, and thus modifies, his view. It would be better, in our opinion, to speak rather of "congenital anomaly of development." From a soil, prepared by heredity, improper education, allowing activity to the inherent vices of constitution, send forth subjects ill-prepared to stand the strain of daily pursuits, upon emotions and intellect.

An intelligent classification of the etiological factors, leads the reader to a clear understanding of the chapters devoted to treatment.

The final word given by the author to a rather unnecessarily lengthy discussion of the pathology of neurasthenia, leaves no doubt of his strong conviction that the disease is an exhaustion neurosis; that loss of cell energy, cerebral and spinal, is the basis of the pathological condition.

One is impressed with the definite conception, and consistency which the author shows throughout the chapters. He clearly differentiates the clinical entity—he has proposed to elaborate from other functional conditions so often erroneously identified with neurasthenia. Among these are the depression psychoses, true hysteria, hypochondria, etc.

Throughout, the writer adheres to the special features that portray the clinical entity and which Charcot originally regarded as the stigmata of neurasthenia. These are the persistent headache, neuromuscular asthenia, rachialgia, gastrointestinal atony with its resulting dyspeptic symptoms, insomnia and cerebral depression.

The author, in discussing each of these cardinal symptoms is mindful that intelligent treatment is dependent upon a clearly understood pathology; that prophylaxis depends upon a knowledge of etiology.

Ballet, with much commendable care points out the essential differences, between neurasthenia and those true perversions of mind among which are "maladie de doubte," the pure abulias and other borderland psychic perversions. He justly takes issue with some writers, Janet among them, who would use the term psychasthenia, to denote a large class of cases—those upon the threshold of true psychoses. On the other hand Ballet himself, has made his classification so broad that he has included cases that would be properly classed as forms of dementia precox.

Most commendable are the chapters upon treatment, the one devoted to education, more particularly. Hypnotism for the neurasthenic is properly condemned, while sugges-

tive therapeutics, direct and indirect, are commended. Concise and clearly stated are the suggestions for treatment. Illustrative of the author's view of the value of proper mental occupation, for the adult neurasthenic, is the declaration that every profession when once adopted, corresponds from the moral standpoint to a group of constant and co-ordinate suggestions, that impel us to act in conformity with a ruling idea and impose on us at any moment, in spite of our individual passions or hereditary inclinations, a rule of conduct conformable to our calling. The chapter devoted to education of the child, predisposed by a bad heredity to become a neurasthenic, is full of valuable suggestion for the physician and pedagogue.

The book does not furnish much that may be called new, but it is a clear exposition of what is definitely known upon the subject and its literary style makes it good reading.

La Fulguration, La Valeur Thérapeutique. By DR. A. ZIMMERN, Professor of the Faculty of Medicine, Paris. Duodecimo; 96 pages. Paris: J. B. BAILLIÈRE ET FILS, 1909. Price, 1 fr. 50.

This interesting little book gives an impartial and very critical survey of the present status of fulguration, first brought into prominence by the studies of de Keating-Hart. Zimmern enters into the history of electrical treatment of surgical conditions, and then presents some theoretical considerations concerning high-frequency currents and the fulguration spark. The instruments and the methods of application are then described in simple style, and the author proceeds to a consideration of the results. There are, in the literature, most enthusiastic and most pessimistic reports on fulguration; Zimmern concludes from what he has seen and read that fulguration unquestionably stimulates the formation of scar tissue to a marked degree and that it has therefore proven of great value in the healing of all forms of sluggish wounds and ulcers. It does not cure carcinoma, but does induce scar formation very resistent to carcinomatous invasion; therefore, it is of value in closing defects left by the removal of carcinomata and in healing over various types of inoperable carcinoma.

The Psychic Treatment of Nervous Disorders. By DR. PAUL DUBOIS, Professor of Neuropathology at the University of Berne. Translated by SMITH ELY JELLIFFE, M.D., Ph.D., Visiting Neurologist, City Hospital; Instructor in Materia Medica and Therapeutics, Columbia University, New York; and WILLIAM A. WHITE, M.D., Superintendent Government Hospital for the Insane, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University. *Sixth Revised Edition.* Octavo; 485 pages. New York: FUNK & WAGNALLS COMPANY, 1909. Price, $3.00, net.

The latest edition of this most important work is a valuable addition to any doctor's library. That it should have been necessary to bring forth six editions of a book of this kind in less than five years is convincing that it has certain merits which appeal not only to the neurologist, but also to any man, be he physician or not, who is at all interested in psychology.

Dr. Dubois shows himself not merely a neurologist, but also eminently a psychologist of the rarest kind—a man who not only can evolve principles, but can apply them practically to the cure of his patients. It would be well if we had more men of his kind: if we had more works like this. The one fact is indelibly impressed on the reader, that it is possible to be "persuasive" with psycopaths and that a great many abnormally diseased minds can and should be cured by arguing rationally and gently with the patient until he is able to see the baselessness of his aberrant thoughts.

If the book speaks the man, Dr. Dubois must have a wonderful personality. We fear that with the best of intentions, most of us would feel that we were not capable of commanding our patients to such a degree that they would be willing to undergo prolonged treatment of the mind without the customary treatment of the body.

Progress in Surgery.

A Résumé of Recent Literature.

Hernia of the Diaphragm, Traumatic and Acquired. T. C. LITTLE-JONES, Liverpool, *Liverpool Medico-Chirurgical Journal,* July, 1909.

The author reports two interesting cases. The first was that of a young man who fell down a flight of stairs and shattered a picture glass. He sustained a wound about 2½ inches long in his seventh left intercostal space, through which a small piece of omentum was protruding. The author removed the eighth rib, cleaned out the pleural cavity of a large amount of blood and glass and found a rent 1½ inches in length in the diaphragm about half an inch from the pericardium, through which omentum was protruding. The omentum was ligated and removed and the rent in the diaphragm was sutured. Despite a rather severe attack of pneumonia, the patient recovered and is to-day perfectly well. The second case occurred in a child of eight, who gave a history of repeated attacks of colic consequent to a fall which occurred eight months before. An attack of obstruction supervening, the patient was operated upon and it was found that the omentum and parts of the transverse and descending colon had passed into the left pleural cavity through a hole the size of a shilling. Great difficulty was met with in attempting to reduce the contents but this was finally accomplished when the negative pressure in the pleural cavity was released by puncturing the diaphragm with a probe director. Nevertheless a portion of the omentum was found densely adherent and the author contented himself with closing the opening in the diaphragm with the prolapsed omentum. The patient seemed to do well for two days and then died from causes not discoverable at the autopsy.

Large Sliding Hernias of the Sigmoid, with the Description of an Operation for Their Relief. LUCIUS W. HOTCHKISS, New York. *Annals of Surgery,* August, 1909.

Hotchkiss deals chiefly with that variety of sliding hernia of the sigmoid, in which there is generally a large preformed sac into which the sigmoid and its mesentery are dragged. The sigmoid in this variety is covered with peritoneum except at the mesenteric attachment. These herniæ are usually irreducible because the mesosigmoid forms a part of the posterior wall of the sac. To follow out the principle essential to the repair of all hernias, viz., the high ligation of the sac flush with the parietal peritoneum is, of course, quite impossible unless some means be devised of reducing the sigmoid within the sac. Tying off the mesosigmoid will accomplish this, but this cannot be done for any considerable distance without sacrificing the blood supply of the bowel.

Hotchkiss has employed the following device: Having freed the cord from the sac, the latter is opened anteriorly and its reducible contents returned into the abdomen. The incision in the sac is then prolonged upward to the internal ring and downward nearly to the lowermost attachment of the mesosigmoid. Now pulling the adherent sac forward the peritoneum of the split sac will become everted in such a manner as to form a new and elongated mesentery for the sigmoid. The edges of this mesentery are sutured together, and the bowel is then easily reduced. The irregular opening into the peritoneal cavity thus left is now closed by purse-string or other form of suture.

The Present Status of Spinal and Local Anesthesia (*Ueber den heutigen Stand der Lumbal- und Localanäthesie*). A. BIER, Berlin. *Archiv für Klinische Chirurgie,* Band 90, Heft 2.

The infiltration with weak cocaine solution, as first practised by Schleich, has been widely employed in the past and, although it is being replaced by simpler, more effective methods, there is still a limited field for its use. The great advance in local anesthesia made by Braun was the combination of cocaine with andrenalin. The introduction of the cocaine substitutes—novocaine, alypin, eucaine B, tropococaine—have replaced the original drug to such an

extent that Bier thinks that in the future cocaine will be employed only on mucous membranes. The combination of novocain with adrenalin makes the ideal anesthetic. In adults 80 to 100 cc.m. of 0.5 per cent. novocain solution combined with adrenalin may be injected without any danger. The action of the adrenalin permits these large amounts to be injected, and at the same time affords long duration and great intensity of anesthesia.

Some time ago, Bier introduced a form of local anesthesia by direct injection into the veins, the method being applicable to these cases—sequestrotomy, amputations, excision of extensive varices, etc—in which the usual methods cannot be practised. It is contraindicated in diabetic and senile gangrene. Bier has employed this technic in more than 134 of the larger types of operations on the extremities.

It is far more difficult to sketch the present status of spinal anesthesia. Bier's experience is that with one exception, due to a technical error, anesthesia was present in every case. Tropacocain has replaced stovaine, being as effectual, and producing no complications. The maximum dose is .05 gm., and Bier always combines it with adrenalin. The height and spread of the anesthesia is controlled by drawing off more or less spinal fluid, and by elevating the pelvis to a greater or lesser height. In 339 cases, only 5 per cent. vomited, and nausea, faintness, and sweating were present in 9 per cent. of the patients. The only sequel was headache, observed in 6 per cent. of the cases.

Bier's indications for lumbar anesthesia are cases in which general anesthesia is contraindicated, extensive and prolonged operations in the pelvis, extirpation of the rectum, etc. It is contraindicated in youthful individuals, in diseases of the cerebrospinal axis, in hysteria, in general sepsis, and in patients who are frequent sufferers from headache.

A New Method of Inducing Local Anesthesia. J. LOUIS RANSOHOFF. *The Lancet-Clinic*, August 7, 1909.

The following case is reported preliminay to a series of experiments on a new method of local anesthesia—that is, by injecting a mild cocaine solution directly into the artery supplying the part to be anesthetized.

Male, aged seventy-two, had been suffering for three years from a chronic osteomyelitis of the hand, which necessitated an amputation. His age and condition contraindicated general anesthesia. An Esmarch bandage was applied about the arm two inches below the insertion of the deltoid. Under infiltration anesthesia the brachial artery was exposed and the needle of a hypodermatic syringe inserted into its lumen, and 1 c.c. of 2 per cent. cocaine solution injected into the artery in the direction of the blood current. After a lapse of two minutes the anesthesia was absolute, and an anti-brachial amputation was done entirely without the knowledge of the patient.

On the Technique of Chondrectomy for Pulmonary Emphysema (*Zur Technik der Chondrektomie bei Emphysema pulmonum*). MAX HOFFMAN, Meran. *Zentralblatt für Chirurgie*, August 7, 1909.

The ordinary operation of chondrectomy as devised by Freund for pulmonary emphysema, consists in the resection (unilateral or bilateral) of about 1½ inches of the cartilages of the second to the fifth ribs. The ultimate success of the operation depends upon the formation of a pseudo-arthrosis between the ends of the divided cartilages, so that sufficient latitude for the expansile movements of the chest may be possible. The author reports a modification of this operation, which, he believes, will ensure the attainment of this end. The periosteum over the anterior aspect of the cartilage to be resected is cut away. After resecting about four inches of cartilage, the posterior perichondrium is divided as its middle, and each end is turned over the corresponding rib projection. As much of the perichondrium as will cover the end of the rib is retained and the rest is cut away; the perichondrium is then sutured over the end of the rib. The external point of resection should be at the costo-chondrae junction. The author reports one operation performed according to this method, in which at the end of 8 months, the amount of motion was as large as at the time of operation.

Clonic Spasm of the Diaphragm Associated with a Cervical Rib. G. B. HUNT, Scarborough. *British Medical Journal*, August 7, 1909.

An anemalc girl, 16 years of age, of neurotic temperament, presented herself with a lump in the left posterior triangle of the neck which proved upon examination to be a cervical rib. Three weeks later, the patient was suddenly seized with clonic spasm of the diaphragm, resembling hiccough, except that, owing to absence of laryngeal spasm, there was not the characteristic "hic" sound of that condition. Despite the administration of all the usual remedies, the spasm continued and at the end of a fortnight, the patient being in a miserable condition, operation was resorted to under ether anesthesia, the cervical rib was exposed; the brachial plexus lay upon its anterior surface, but the phrenic nerve was nowhere to be seen. The rib was resected. The spasm ceased promptly upon recovery of the anesthetic and has not returned. The author believes the spasm was due to irritation of the phrenic, but guardedly suggests the possibility that the cessation of the spasm might have been due to the influence of the anesthetic and suggestion. No similar case has been reported.

The Value of the Test Meal in Gastric Diagnosis. C. GRAHAM and D. GUTHRIE, Rochester, Minn. *New York Medical Journal*, September 4, 1909.

These authors present statistics of a larger number of test meal examinations and prove conclusively that test meals have not nearly the clinical significance commonly held. For instance, in regard to acidity alone, this was above normal in 103 of 237 cases of gastric ulcer, while in 106 it was normal and in 28 subnormal. In cancer of the stomach, free HCl was present in 70 out of 150 cases. In 84 cases of pyloric spasm due to gall stones and appendicitis, the findings were similar to those in ulcer of the stomach. In pernicious anemia, on the other hand, free HCl was found in but one case, and apart from the food remnants, these cases show a test very analogous to those found in cancer.

[While very iconoclastic, this paper is also very suggestive, and will tend to excite distrust in conventional views on the value of the test meal in diagnosis.]

How Long After Death or Amputation is Bone Bacteria Free and Transplantable? (*Wie lange nach dem Tod oder nach der Amputation bleibt der Knochen bezüglich seiner Keimfreiheit transplantionsfähig?*) W. BERGEMANN, Königsberg. *Archiv für Klinische Chirurgie*, Band 9, Heft 2.

Careful bacteriological technic was employed in the examination of twenty specimens of bone from patients that died of various acute and chronic infections and other diseases. The result was that with one exception (a subject who died 44 hours before in diabetic coma) all the cultures were sterile. Bergemann believes that it may be stated with absolute certainty that the bones are bacteria-free for the first 12 hours after death. The examination of the bones from amputated limbs gave less definite results, because several of the six cases studied were from infected fields. Nevertheless the average length of time during which the bones were bacteria-free was 16 hours after amputation.

Experimental Investigation on the Sensibility of the Abdominal Cavity (*Experimentelle Untersuchungen über die Sensibilität der Bauchhöhle*). C. RITTER, Greifswald. *Archiv für Klinische Chirurgie*, Band 96, Heft 2.

The greater part of this interesting experimental work is concerned with the substantiation of the experiments of Meltzer and Kast, who have demonstrated that the old Lennander dictum is wrong and that viscera, as well as parietal peritoneum experience painful (and other) sensations. Ritter extended their observations to all organs in the abdominal cavity and found that they are all subject to pain. Ritter established as standard of pain the ligation of bloodvessels, structures that are everywhere subject to

pain. The sensibility of the viscera is rapidly lost when they are displaced from the abdomen or are subjected to any drying process. Several observations were made on human beings.

The one point on which Ritter disagrees with Meltzer and Kast is their explanation of the action of cocaine. In attempting to account for Lennander's findings, Meltzer and Kast discovered that cocaine when injected into an animal acts as a general as well as local analgesic; they, therefore, suppose that this is what happens in man when the abdominal wall is infiltrated with cocaine for a laparotomy. Ritter found that when cocaine is injected intra-abdominally (r. q., into the mesentery) the parts are rendered anesthetic locally, and no general anesthesia is induced; the small amounts of cocaine used in man acts, he believes, in the same way. He considers that the painlessness of intra-abdominal manipulations in man depends on the injury to the delicate sensory nerve fibers, produced by the manipulations.

Retroperitoneal Lipoma. M. S. HENDERSON. *The Journal of the Minnesota State Medical Association and Northwestern Lancet,* September, 1909.

But few symptoms are produced by such tumors, and they exert their baneful influence upon the individual by mechanical effects due to pressure. Usually it leads the patient to seek relief. A dragging sensation, which does not amount to real pain, is usually complained of. Nausea and vomiting may be present, and the latter may be so persistent as to cause a marked degree of inanition. Dyspnea, due to pressure upwards on the diaphragm, may be a prominent symptom. The growth of the tumor may even be so extensive as to press on the common duct, causing jaundice and introducing a serious complication, making the diagnosis still more difficult. Obstruction of the bowels may supervene. Neuralgia of the legs, and, in fact, almost any symptom that might be caused by pressure on important organs may be present in the late stages.

In the case at hand, a previous history was given of injury, which is often a prominent factor in the causation of lipomata elsewhere in the body.

A diagnosis of these growths is difficult. Probably the most frequent error has been to mistake them for ovarian tumors; the growths closely simulate the fluctuation of a cyst-adenoma of the ovary. This evidence has been so positive to some surgeons that even after a dry puncture an exploration was necessary to convince them of the error of their diagnosis.

This tumor is also often confounded with retroperitoneal sarcoma, but the latter grows more rapidly, and cachexia is, as a rule, more marked.

From the fact that this condition has been variously mistaken for hydronephrosis, distended gall-bladder, pancreatitis, and mesenteric cysts, it will be seen that a differential diagnosis is often impossible, and the condition is one which exploration alone will clear up.

Congenital Recesses of the Lower Lip; With Three Illustrative Cases. R. C. DUN, Liverpool, *Liverpool Medico-Chirurgical Journal,* July, 1909.

The rarity of this condition is evident from the fact that only 38 cases have been recorded in medical literature. These recesses are nearly all associated with hare-lip, with or without cleft-palate. Curiously, this deformity frequently occurs in members of the same family. Three varieties of congenital recesses of the lower lip have been observed, exemplified in all of the author's cases. In the first patient, who also had a double hare-lip and a cleft palate, there were two small symmetrically placed openings on either side of the median line situated more toward the posterior aspect of the lip. The sinuses ran downward slightly converging and ended blindly on the inner aspect of the lip. The second case varied from the first only in the fact that at the mouth of each sinus there was a small nipple-like process which could be protruded or retracted at will. In the third patient, the recess consisted in a mesially placed transverse slot-like cavity, about ¾ inch long and ½ inch in depth. There is no valid embryological explanation of this deformity. The first two cases were easily cured by dissection of the lining membrane of the sinus.

The Operative Mobilization of the Knee Joint (*Zur operative Mobilisierung des Kniegelenks*). R. KLAPP, Berlin. *Zentralblatt für Chirurgie,* August 28, 1909.

This ingenious operation is based upon the fact that in ankyloses of the knee joint, the posterior aspect of the femoral joint surface is uninvolved. The principle of operation consists in the utilization of this area for a new joint surface. The adhesions are first broken down under anesthesia to the point of extreme flexion. With the knee joint held at right ankles, a vertical incision is made on the lower and inner aspect of the femur and a large wedge is removed from the bone. The wedge is so made that its base is anterior and includes the upper part of the anterior joint surface of the bone; while the angle lies just above the upper limits of the posterior joint surface. The sawn ends of the femur are then approximated and nailed, care being taken that the fibial aspect of the femoral surface is not disturbed from its place. Thus far the author has performed this operation in two cases. The first patient at the end of 6 months is able to flex his knee joint to the right angled position. The second operation was done too recently to warrant the deduction of any conclusions.

Surgical Aspects of Cerebral Compression. With Remarks on the Etiology and Certain Manifestations of Papilledema. C. H. FRAZIER, Philadelphia. *Journal of the American Medical Association,* September 11, 1909.

Frazier discusses the etiology of papilledema at some length with special reference to the intrancranial tension as a cause. He gives the results of experiments made by Dr. de Schweinitz and himself from which he draws the conclusion that some factor or factors other than intracranial tension must play an important part. By neither method employed (increasing the tension by gravitation from a water bag, or inserting a rubber bulb under the dura) was papilledema produced. For the past two years also Dr. de Schweinitz has examined all the cases of intracranial trauma in which there was obstruction to the venous circulation, received in Dr. Frazier's service at the University Hospital and in all he has discovered but two cases of papilledema, which are here reported. It would appear from these cases, in both of which the patients recovered without operation, the papilledema is not an indication for decompressive operation. Frazier also calls attention to the relative infrequency of papilledema as a manifestation of serious types of intracranial trauma. He does not find any diagnostic significance either as to the side on which the tumor causing the symptom is to be located, in the relative size of the discs. Passing next to the subject of decompression operations and confining his remarks chiefly to tumors, Frazier starts with the well-known fact that the majority of intracranial tumors are inoperable and to say that from 75 to 80 per cent. are of this class, is by no means a conservative estimate. We have the choice of two operations. the radical and the palliative, and in the majority of instances the most we can offer is palliation. In case of a brain tumor palliation means more than it does when applied to other incurable lesions. It implies often the restoration or preservation of vision, relief from headache and from persistent vomiting, which make life hardly endurable. Decompression is much the less formidable operation. It implies the removal of an area of bone with a diameter of from 3 to 5 cm. from the occipital or temporal region on one or both sides, and a free opening in the dura or the removal of a portion of it. In all pretentorial tumors, temporal decompression is the operation of choice, and in all subtentorial lesions a suboccipital decompression is indicated. Frazier gives tables of two serious cases which do not indicate a great deal of difference in the two locations of the operation as far as the result was concerned, but it is reasonable to suppose that a preoccipital operation would not be so likely to relieve a subtentorial lesion as one right over the location of the tumor. The operation is called for as a rule in inoperable tumors. Delay is permissible in cases in which there has been a temporary improvement under medical treatment. The hernia is usually well covered with the

hairy scalp and is therefore not very conspicuous. Vomiting or headache, one or either, are relieved in two out of every five cases by decompression. The effects of the operation are in the main beneficial, even if the patient only lives a year, but exceptionally life may be much more prolonged.

The Use of Animal Membrane in Producing Mobility in Ankylosed Joints. W. S. BAER, Baltimore. *Johns Hopkins Hospital Bulletin*, September, 1909.

The animal membrane employed by the author is derived from the pig's bladder and is chromicized so as to resist absorption about forty days. After separating the ankylosed joint surfaces, the membrane is placed between and sutured in place. The joint is then closed and a fixation dressing is applied. Passive and active motions, together with massage, are instituted after the first dressing, *i. e.*, not later than the tenth day. In the five cases in which this method was employed the results were sufficiently satisfactory to encourage further trial. Chromicized pig's bladder gave good results in cases in which Cargile's membrane had failed.

Diseases of the Eye and Orbit Secondary to Pathologic Changes in the Nose and Accessory Sinuses. CHRISTIAN R. HOLMES. *Annals of Otology, Rhinology and Laryngology*, June, 1909.

Holmes agrees with Birch-Hirschfield as to his conclusions in regard to this matter. The author brings out two points in relation to the diagnosis and operative management of suspected cases of frontal sinus infection.

1. When the obscure clinical symptoms and somewhat negative findings of our diagnostic aids, such as the transilluminator, have left us in doubt as to the condition of the sinus, we should not hesitate to make an external exploratory opening. The author has often resorted to a short incision just below the supraorbital margin above the inner canthus and exposing only enough bone to permit the removal of a disc 5 mm. in diameter by means of a hollow electric drill. If the sinus is healthy, then the wound is closed with catgut suture and hermetically sealed with gauze and collodion dressing. This latter is left on for two weeks. In another two weeks it is difficult to find the scar.

2. On account of its great importance, attention is called to the fact that we should not do minor intranasal operations within a period of several days before an extensive external operation in cases where we have to deal with a streptococcus infection because of the liability to erysipelatous infection of the skin wound. The minor intranasal operation is liable to excite the streptococci present to a high degree of virulence. While in this condition of exalted virulence infection of the external skin wound is more than likely and an erysipelatous inflammation starting in this neighborhood is extremely dangerous to the eye, if not indeed to life itself.

When during an acute frontal sinus inflammation it becomes absolutely necessary to give vent to pent-up pus, establish drainage through a small opening in the floor of the sinus, doing as little damage as possible to the skin and subcutaneous structures and postpone the radical operation upon and cure of the cause until the acuteness of the inflammation and the virulence of the streptococci have subsided.

Orbital Complications of Disease of the Frontal Sinus. HOWARD F. HANSELL. *Annals of Otology, Rhinology and Laryngology*, June, 1909.

Affections of the frontal sinus involve the orbit in one of three ways: by displacement of the structures, by infection, by functional disturbances.

1. Mechanical displacement. Protrusion downward of the floor of the sinus by a collection of foreign matter in it will cause displacement of the orbital contents according to the degree and site of the swelling. The symptoms closely resemble those of an orbital tumor interposed between the eyeball and orbital roof.

2. Infection. The pus invades the orbit directly through the perforated bone or is carried to the orbital tissues by the vessels. The causes of indirect infection are caries of the orbital roof, thrombophlebitis of the orbit, thrombosis of the cavernous sinus, infection of the brain structures and transmission of the germ along the optic nerve sheath to the ball and to the muscles and lacrimal apparatus.

3. Functional, in which there are no anatomical findings. Involvement of the eye and muscles is shown by accommodative and muscular asthenopia, limitation of fields, diminution of central vision and central scotoma. Under this head are included some of those obstinate cases of asthenopia, which glasses will not cure. No lesion of the eye exists. The error of refraction may be small or great, spherical or astigmatic, perfectly corrected under mydriasis and the glasses intelligently worn. It may be that no symptoms exist which point to a sinus disease and attention is not called to the sinus as a possible source of the trouble, yet the oculist's duty is not fulfilled unless he eliminates the frontal sinus from the etiology.

Some Ocular Symptoms of Diseases of the Nasal Sinuses. WM. CAMPBELL POSEY. *Annals of Otology, Rhinology and Laryngology*, June, 1909.

First the symtoms of the eye-strain which may be evoked by a sinusitis are mentioned. In this assemblage, mention need not be made of the orbital and periorbital pain which the various forms of inflammation of the sinuses may evoke, but attention is called very briefly to the dull ocular pain, to the photophobia and the conjuctival symptoms after any use of the eyes, which glasses fail to relieve and which disappear after rhinologic treatment. In this class of cases the oculist finds difficulty in determining the proper axis of the cylinder, in correcting the astigmatism, and observes various vagaries in the behavior of the ciliary muscles.

In the condition of active and passive hyperemia of the orbital tissues, the function of the extraocular muscles, as well as that of the intraocular, may be interfered with and double vision may result, or if diplopia be not complained of it can be obtained by careful search in the extreme periphery of the field of activity of the individual eye muscles. More constant and serious affections of the muscles of the eye may result from a more active state of inflammation within the sinuses, and actual palsy may occur either as a consequence of the juxtaposition of some of the eye muscles with the walls of the orbit, such as the internal and superior rectus, or by an involvement of the nerves as they pass along the walls of the sphenoidal sinus.

Persistent Thoracic Sinus Following Empyema. A Report of 15 Cases Treated by Decortication of Lung and Thoracoplasty. CHARLES N. DOWD, New York. *Journal of the American Medical Association*, October 16, 1909.

DOWD has performed the operation of lung decortication connected with thoracoplasty in fifteen cases in children. In his patients ether was used, the patient lying on the sound side. "'Orientation' incision was made about the sinus opening with resection of 3 or 4 inches of the rib above and the one below it. The incision was then carried upward in anterior axillary line to the third rib. The ribs were divided and suitable portions removed, usually one-half inch from the second or third, 4 to 6 inches from the tenth, and corresponding pieces from the intermediate ones. Sometimes less was taken away. With suitable retraction an excellent view of the sinus is thus obtained. A longitudinal incision is then made through the upper part of the sinus wall until the lung is reached. At this stage of the procedure the patient is allowed so nearly to emerge from the anesthesia that he will cough, when the lung usually bulges into the incision. The membrane is then separated from its surface over as large an area as is practicable and removed. In most of these cases a strip 2 or 3 inches long and from 1 to 2½ inches wide has been removed. This about represents the pulmonary portion of the sinus lining. The chest wall was nearly brought together by strong sutures and a drain or suction tube inserted in the unclosed part." The amount of chest wall removed varied according to the case and according to the likelihood of gaining lung expansion. In every case persistent and continued blowing on James' (or Wollf's) bottle has been used. The expansive power accompanying this

method is very great. The results are very encouraging, twelve of the fifteen being perfectly well, with varying degrees of chest expansion and capacity, and without lateral curvature of the spine. One patient is still in the hospital, one died of tuberculosis, and one was removed while doing reasonably well two days after the operation, and died a few days later in insanitary tenement surroundings.

A New Method for the Determination of the Coagulation Time of the Blood (*Eine neue Methode zur Bestimmung der Gerinnungszeit des Blutes*). W. RIEBES. *Muenchener Medizinische Wochenschrift,* September 21, 1909.

An accurate yet simple method of determining the coagulation time would be of great value. The author has modified Bürker's method. A large slide is used containing six separate hollows. These cavities are filled with pure olive oil, and a drop of blood, freshly obtained by puncture of the patient's finger, is caught up in each. Every half minute a fine wire (hypodermic) is passed from below upward through the blood drop (so carefully that the drop is not subdivided). In from 12-14 minutes a slight coagulum is raised above the level of the oil during this maneuver, if the oil has been kept at a temperature of 20° C. By using oil as a medium, extraneous influences are minimized and a more accurate determination is possible.

Factors Influencing the Coagulation Time of the Blood. MYER SOLIS-COHEN. *The Pennsylvania Medical Journal,* September, 1909.

1. The variations in the clotting time of the blood as obtained by different methods are due to (*a*) factors influencing the coagulability of the blood while still in the natural channels and (*b*) errors of technic affecting the blood after it has left the vessels.

2. Coagulability is not affected by out-door temperature, humidity, menstruation, fever, diarrhea, anemia, or alcohol.

3. The clotting time is shortened in pulmonary tuberculosis in all three stages, after a hemorrhage, and when the barometric pressure is high.

4. Serous hemorrhages, which, according to Wright, are associated with conditions of defective blood coagulability, are sometimes associated with increased coagulability.

5. The clotting time is increased in jaundice.

6. The coagulation time seems to be less before a meal and greater after it.

7. In typhoid fever the blood coagulability is diminished during the acute stage, but increased in convalescence.

8. The clotting time is shortened by applications of heat to the shed blood, by pressure on the punctured part, and by exposing the blood to the air when the humidity is low.

9. Provided the puncture is free and made with a sharp lance-pointed instrument, the depth of the wound does not affect the clotting time. Nor is the size of a drop a great factor if the blood is protected from the air.

10. Many sources of error are eliminated by the stenderdish method, which has the following advantages over the other methods of measuring the clotting time: (*a*) The contact surface is limited in extent, clean, and uniform in character; (*b*) there is practically no evaporation; (*c*) the temperature is definite and constant; (*d*) the size of the drop is uniform; (*e*) the personal equation is largely eliminated; (*f*) the method is simple and easily available; (*g*) the results are fairly constant.

11. By means of simple equations a clotting time obtained with one method may be expressed in terms of another method.

Primary Sarcomata of the Stomach (*Les Sarcomes Primitifs de l'Estomac*). LOFARO, Rome. *Archives Générales de Chirurgie,* August 25, 1909.

After reporting two fatal cases of primary sarcoma of the stomach, the writer reviews the literature of the disease. No etiological factors of any importance can be discovered. The age limits are 3 and 78 years. Pathologically there are two distinct forms: 1. The circumscribed or nodular variety, usually myo-, myxo-, or fibro-sarcoma. In most cases the tumor grows near the greater curvature, often extending into the great omentum. It may attain an enormous size and may involve the whole stomach; usually, however, the main part of the growth is extra-gastric, the mucosa is not ulcerated, and the pylorus is not encroached upon. These tumors, often presenting interstitial hemorrhages and cystic changes, are frequently mistaken for omental tumors. 2. The diffuse infiltrating type ulcerates the mucosa early in its growth and presents a pathological picture indistinguishable from carcinoma except by microscopical examination.

The symptoms of the sarcomata of the first type may be very few; in some cases the patients complain only of the presence of the tumor. The symptoms of the second type are apt to be more numerous. In the order of their frequency they are: Epigastric pain, presence of a tumor, rapid emaciation, anemia, vomiting, hematemesis, melena, cachexia late in the course of the disease. There may be slight fever, some of the cases present a moderate leukocytosis; in a few cases free hydrochloric acid was absent. The diagnosis is often impossible. Treatment should be radical, when feasible, but too often the patients come to operation at a stage when there are already visceral and glandular metastases.

Multiple Adenomata of the Rectum. JAMES P. TUTTLE, New York. *The Practologist,* September, 1909.

The writer makes a clear distinction between multiple polypi and multiple adenomata. The former are pedunculated, the overlying epithelium is normal, symptoms are not alarming, there is slight (if any) tendency to malignancy or to recurrence after removal. The adenomata, on the other hand, are sessile, rarely limited to one portion of the bowel, very vascular, show a distinct proneness to malignancy and to recurrence after their removal. The chief symptoms of the latter disease are pain, diarrhea, hemorrhage, and exhaustion. From Tuttle's experiences in his cases and in other cases whose treatment he has observed, he concludes that there are no hard and fast rules to be laid down. He does not know whether it is ever wise to attempt to snare, cauterize, or curette this type of growth; nor can he say whether it is justifiable to proceed to radical measures when the general condition of the patient is good and can be maintaind so by general and local treatment. In one case the multiple adenomatous growths disappeared by giving the bowel prolonged rest by means of a colostomy.

Extrophy of the Bladder Treated by Extraperitoneal Implantation of the Ureters into the Rectum; End Results of Intestinal Implantation. J. J. BUCHANAN, Pittsburg. *Pennsylvania Medical Journal,* September, 1909.

The author reports a case in which the Bergenhem operation resulted successfully. The patient was an infant 10 weeks old, the subject of a complete extrophy of the bladder. After passing a ureteral catheter as a guide, each ureter was separated, leaving a rosette of mucous membrane about 1 cm. in diameter, surrounding its orifice. The surrounding tissues were pushed off from the ureters until the peritoneum was reached and this was pushed upward until about 4 cm. of each ureter was exposed. With the finger, the rectum was then pushed upward until the rectal wall appeared just underneath the surface; a small opening was made into the rectum and the ureter with its surrounding rosette of mucous membrane was drawn into the rectum. A few stitches were passed between the bladder wall and the skin margin to prevent retraction of the ureters from the rectum. Recovery was satisfactory and seven months later the child was perfectly well.

Being interested in the frequency of ascending urinary infection after intestinal implantation of the ureters, the author undertook an investigation of all the reported cases in which such operations were performed. Of 96 patients, eight died subsequently of ascending renal infection, while 65 were entirely well at the last report, varying from one to 12 years after operation. These figures, according to the author, do not justify the widespread notion that ascending infection is the usual consequence of rectal implantation of the ureters.